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ABSTRACT

GRADES OR AGES: Grade 3. SUBJECT MATTER: Arithmetic, social studies, language arts, spelling, writing, literature, reading, science and health, art, and physical education. ORGANIZATION AND PHYSICAL APPEARANCE: The guide gives suggested weekly and daily time allotments. One chapter is devoted to each subject, with additional chapters on language attainment, arithmetic enrichment, and science enrichment. The supplement provides more detailed information on the science and health program. The guide is mimeographed and spiral bound with a soft cover. The supplement is mimeographed and staple bound with no cover. OBJECTIVES AND ACTIVITIES: The objectives for each subject are set out at the beginning of each chapter, followed by a listing of suggested activities. INSTRUCTIONAL MATERIALS: Texts, films, tape recordings, records, art and science materials are listed in the appropriate chapters. There is also a general bibliography. The supplement gives details of all materials required for each activity. STUDENT ASSESSMENT: No specific provisions are made for evaluation. (MBM)

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CHEYENNE PUBLIC SCHOOLS
CHEYENNE, WYOMING

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GUIDEBOOK

THIRD GRADE

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3P007165

FOREWORD

Committees of teachers, special personnel and principals worked diligently to develop this guidebook. It serves a definite purpose to help teachers who are starting their teaching, and also for those who have had extensive experience. It does not dictate the methods or the speed of teaching in any one subject. Teaching is an art and a science, which means teachers must have some choice in their materials and methods. The guidebook was developed to fulfill these needs.

After these study guides were in use for a number of years, the idea was conceived to develop enrichment materials in mathematics and science. These booklets were originally published separately and made available to teachers. It was the wish of many elementary teachers that these materials be incorporated in a regular guidebook for greater convenience to the teacher.

I am taking this opportunity to thank all of those who have contributed to this publication, and who have thus made education a little more vital.

L. D. Crane
Superintendent of Schools

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Appendix A-1

SUGGESTED WEEKLY TIME ALLOTMENT
MINUTES PER WEEK

THIRD GRADE
(Revised 1964)

Subject	Minutes Per Week
Reading and Phonics	550
Language and Literature	100
Spelling	100
Writing	75
Arithmetic	175
Social Studies	125
Science, Health and Safety, Art	125
Music	100
Organization and Recess	225
TOTAL	1,575

SUGGESTED DAILY PROGRAM

Subject	Time
Organization (opening, planning period, etc.)	9:00 - 9:15
Arithmetic	9:15 - 9:50
Reading and Phonics Group C	9:50 - 10:10
Recess	10:10 - 10:25
Reading and Phonics Group B	10:25 - 10:45
Reading and Phonics Group A	10:45 - 11:05
Writing and Spelling	11:05 - 11:40
Music	11:40 - 12:00
Noon dismissal	12:00
Reading - three groups	1:00 - 1:45
Language	1:45 - 2:05
Recess	2:05 - 2:20
Science (Mon., Tues.) Health & Safety (Weds,Thurs.) Art (Fri.)	2:20 - 2:45
Social Studies	2:45 - 3:15

ARITHMETIC (Tentative)

Arithmetic teaching aims to develop desirable attitudes toward and a basic understanding of our number system. This in turn leads to increased confidence and satisfaction in its use.

Objectives

To further develop independent reasoning.

To increase the ability to organize work and material.

To realize the social and economic importance of numbers in our lives.

Suggested Time Units and Skills to be Covered in Third Grade

First Quarter - pp. 1-58

Learning Stage One - pp. 1-26
- Counting and comparing
- Writing numerals
- Numbers that show order
- Understanding tens and ones
- Finding patterns in a numeral chart
- Number sentences for stories
- Learning what addition means
- Using the number line
- Names for a number
- Learning what subtraction means
- Subtraction sentences
- Subtracting on the number line
- Writing number sentences from stories
- Seeing how subtracting undoes adding

Learning Stage Two - pp. 27-58
- Adding more than two numbers
- Using number sentences in solving problems
- Adding and subtracting ones and tens
- Writing number sentences for problems
- Hundreds, tens, and ones
- Using addition and subtraction facts
- Adding and subtracting hundreds, tens, and ones
- Zeros in addition and subtraction
- Deciding how to solve problems
- Figuring out the answer
- Comparing parts of a whole
- Parts of the number in a set
- Telling time
- Using a calendar

Second Quarter - pp. 59-115

Learning Stage Three - pp. 59-84
- Using patterns in addition
- Adding with two-place and one-place numerals
- Adding more than two numbers
- The order in which we add
- Finding how many more or how many fewer
- Which number is greater and which is less?

Learning about thousands
Adding and subtracting hundreds and thousands
Checking addition and subtraction
Learning about money
The dollar sign and point
Problems about money

Learning Stage Four - pp. 85-115
Different names for a number
Hundreds, tens, and ones
Regrouping in addition
Sensible answers
Learning about measures
Measuring by the inch
Parts of the same size or number
Halves and fourths of an inch
Measuring to the nearest half inch and fourth inch
Parts of sets of 12 and 16
Practice in regrouping
Figuring out answers for problems

Third Quarter - pp. 116-198
Learning Stage Five - pp. 116-141
Using patterns to add
Column addition and regrouping
Solving problems of different kinds
Remembering subtraction
Solving problems about money
About what will the answer be?
Finding number patterns
Showing numbers on the abacus
Roman numerals
Another look at time

Learning Stage Six - pp. 142-170
Regrouping a number twice
Regrouping in addition and subtraction
Writing the remainder as one numeral
Choosing sensible answers
Writing numerals for fractions
Parts of the number in a set

Learning Stage Seven - pp. 171-198
From addition to multiplication
Multiplication on the number line
Using 1 in multiplication
Deciding how to solve problems
Seeing how dividing undoes multiplying
Using 1 in division
Multiplication and division sentences
Practicing addition and subtraction
Parts of the number in a set
Points and lines
Understanding what a line segment is
Studying shapes you know
The circle
Drawing shapes
Square corners and other angles

Fourth Quarter - pp. 199-282

Learning Stage Eight - pp. 199-226

Discovering multiplication and division facts
Writing related number sentences
Multiplying and adding to discover facts
Dividing and adding to discover new facts
Multiplying and dividing with tens
Deciding how to find answers
Multiplying and dividing tens and ones
Learning about tens of thousands
Reading and writing numerals for large numbers
Finding about what the answer is
Liquid measure
Thermometers
Learning about a mile

Learning Stage Nine - pp. 227-260

Multiplying tens and ones
Writing multiplication examples
Dividing tens and ones
Writing division examples
Dividing amounts of money
Deciding when to multiply and when to divide
Relating multiplication and division
Practicing addition and subtraction
Deciding how to solve problems
Different fractions for the same number
Dividing to find parts of the number in a group
Learning to read a graph
Learning about cubes
Circle and spheres
Seeing shapes in things around you
Problems to think about

Learning Stage Ten - pp. 261-282

Making an addition and subtraction chart
Another pattern for adding and subtracting
Reading a map
Making a multiplication and division chart
Greater than and less than sentences
Solving problems
Multiplying larger numbers
Dividing larger numbers

Suggested Activities and Evaluation

Use the Teacher's Guide constantly. It will give objectives, lesson plans, help, and other valuable aids to teaching arithmetic.

We suggest that a short test be given at the end of each unit. Remedial work called for by the test may be given before going on to the next unit. Use extra practice material - pp. 283-310.

Use concrete materials followed by drawings and pictures. They have teaching value. Follow teacher's edition for manipulative devices.

We suggest that the teachers use as many games and devices as possible to give variation.

The cards by the Iroquois Publishing Company furnish material for drill periods.

Pocker charts
Colored tooth picks or counters
Measuring cups - rulers
Flannel boards
Paper pie plates or cut circles
Money, abacus
Charts
Filmstrips (in Audio-Visual Catalogue)

Basic Text:

MORTON, et al., Modern Arithmetic Through Discovery - Book III, Chicago, Silver Burdett Company, 1962.

TEACHER REFERENCES FOR ARITHMETIC

MORTON, GRAY, SPRINGSTUN, SCHAAF, Making Sure of Arithmetic, Book III, Chicago, Silver Burdett Company, 1956

BRUECKNER AND GROSSNICKLE, How to Make Arithmetic Meaningful, Philadelphia John C. Winston Company.

WHEAT, HARRY GROVE, How to Teach Arithmetic, Evanston, Illinois: Row, Peterson and Company.

Bulletin No. 7AS - C.S., Wyoming Course of Study for Arithmetic. Grades 1-8, Wyoming: State Department of Education

SPITZER, HERBERT F., Practical Classroom Procedures for Enriching Arithmetic, Webster Publishing Company, 1956.

SOCIAL STUDIES

The conduct and the thinking of the children should be changed as a result of the work done in social studies. In order to become properly adjusted to one's environment, one has to have some understanding of it.

Working together on common problems will help children learn to get along with others and to accept criticism. Respect for all people regardless of race or color should grow out of the work in the social studies.

Objectives

To develop in the child a desire to cooperate with his group, his home, his school, and his neighborhood.

To appreciate how the early settlers built up our nation while they were busy providing for the necessities of life.

To arouse an interest in the privileges we enjoy because of the efforts, toil, and sacrifices of pioneers of our community.

To build up a concept of modern industrial activities and processes.

To grow in the power to think clearly in solving problems that affect individual and group life.

To cultivate an understanding of the principles of democracy, and develop a loyalty toward the democratic way of life.

To provide the child with experiences that will help to develop his powers of observation, and an understanding of his environment.

To develop best powers of self-expression, creative and critical thinking.

UNITS TO BE USED IN GRADE III

UNIT I - Community Life (three weeks)

Arouse the child's interest in his community.

Increase the child's knowledge of what it takes to build a community.

Learn to appreciate the contributions of the pioneers.

Inspire a desire to assume cooperative responsibility in community life.

UNIT II - Foods (five weeks)

Learn the sources of some of our common foods.

Understand how everyone is dependent upon the people who produce and prepare food.

Learn the value of pure clean foods.

Develop good habits of food selection.

UNIT III -

A. People Who Lived Here Long Ago (four weeks)

To be correlated with Thanksgiving.

Stimulate an interest in people outside of our own group.

Promote interest in the early history of Wyoming.

Show how environment influences man's shelter, food, and clothing.

Develop appreciation of the contribution of a primitive group to our present culture.

B. Christmas Activities (three weeks)

UNIT IV - Homes (five weeks) January through first week of February

Attain an appreciation of the progress made in the types of shelter people use.

Obtain an understanding of the various kinds of shelter, and the reasons for different types.

Grow in knowledge of the various materials and appliances used in constructing a home.

Cultivate a knowledge of the occupations and trades involved in constructing a home.

Enlarge the children's capacity for creative expression by drawing different types of homes and sketches, making original poems, stories and riddles.

Motivate further study and research about different lands.

UNIT V - Clothing (four weeks) Three weeks of February and one week of March

Gain a knowledge of the sources of clothing or materials used in clothing.

Stimulate the child's interest in these sources, materials, and the human labor involved in providing our clothing.

Give the child some idea of interdependence involved.

UNIT VI - How People Travel (five weeks) Middle of March and first part of April

Show that the satisfaction of the community's material needs is dependent on transportation.

Develop ideas of distance and direction.

Develop an increasing understanding of the relationship between the community and the individual.

Extend the child's horizon, increase his inquisitiveness, and enrich his experiences.

Develop a global concept of the world.

Show how means of transportation may compensate for unfavorable geographic location and conditions.

UNIT VII - Messages (three weeks) May

Learn how people exchange thoughts, ideas, and information.

Appreciate the great scientific strides made in communication.

Learn to work together in our pupil-teacher planned activities in order to find out about communication.

Grow in skill of reading, organizing and developing the activities which will tell us about communication.

Basic Text:

McINTIRE, A.. and HILL W., Working Together, Follett, Chicago, 1959

TEACHER REFERENCES FOR SOCIAL STUDIES

TIEGS and ADAMS, Teaching the Social Studies, Ginn & Company, 1959

MICHAELIS, Social Studies for Children in a Democracy, New York: Prentice Hall, 1950

MOFFATT and HOWELL, Elementary Social Studies Instruction, Longman's Green and Company, 1952

PRIMARY LANGUAGE ARTS PROGRAM

Third Grade

The Language Arts Program includes both oral and written expressions of children's experiences, knowledge and interpretations.

The teacher should provide ample opportunity for the children to have experiences that will provide ideas and purposes for conversation. Provision should be made in the daily program for free conversation.

Language Activities

1. Informal conversation
2. Choral-speaking, prose and poetry
3. Finger plays
4. Telephoning
5. Group discussions
   To direct observations
   To learn to state ideas so others can understand
6. Planning together
   For plays or dramatizations
   For trips
   For improving standards of behavior or safety
7. Puppet plays
8. Dramatization (courtesy practices, pantomimes and shadow plays, rehearsed plays, stories, and creative)
9. Telling stories, both original and those they know
10. Giving oral messages
11. Giving explanations and directions
12. Letter writing, story writing
13. Captions and labels
14. Short notes and messages
15. Listening (to enjoy literature; for information, instructions, and explanations)

Curricular Resources

1. Everyday experiences at home and at school
2. Holiday and special day activities and interests
3. Recreational and informal reading
4. Group enterprises within the classroom and on field trips
5. Observations and activities related to nature and science study
6. Social studies, health and safety experiences and activities
7. Culminating situations, such as programs, class parties, dramatizations, etc.

Underlying Principles

1. Language teaching is a day-long activity - practice language learnings in all forms of speech and writing that are a normal part of everyday activities.
2. The language program should be developed from the normal interests and experiences of children.
3. The language program should take account of language needs in the other subjects.

4. Language skills are more readily learned and mastered in connection with occasions that demand the use of such skills.
5. Language skills should be taught in conformity with child growth and development facts and demands for use of the skills in normal situations that confront children of successive age and grade levels.
6. The language program should make definite provision for individual differences in interests, capacities, and achievement of children.
7. Oral language should be stressed.
8. As the tendency of children to imitate is a strong factor in the improvement of language skills, the teacher should strive to be a correct model.
9. The child should acquire the ability and tendency to appraise his own work.
10. In language teaching, the positive approach is desirable.
11. The power to think clearly and logically underlies all expression - help children acquire organization of thinking.
12. Retention of new learning should be maintained by frequent reviews and additional practice in purposeful application of the skill in a vital language situation.

The Sharing Period

Oral language includes both speaking and listening. These two facets of language are a basis for reading readiness and are essential in the improvement of reading skills and abilities. The practice of having children engage in informal news exchange, show and tell, or sharing period is a valuable part of the daily language experiences in the primary grades. Such a period should be a learning situation with the teacher guiding the conversation so that the children are stimulated into further thinking, discussing, understanding and even experiencing whenever learning activities can grow out of this sharing period.

The teacher should be mindful of creating an atmosphere which encourages ease in speech. Encouraging children to present material of personal interest should be accompanied by some instruction in the use of accepted forms of courtesy and consideration for the listener. Work for an acceptable voice quality, with clear articulation, enunciation, and pronunciation. Distractions should be kept to a minimum so that good listening habits may be acquired. Children should be guided to react with questions or comments, and the teacher should see that all children participate to the extent of their ability.

Correcting oral language errors is usually not done during this period, unless the teacher is writing the item on the board and attention can be drawn to the correct form easily. The teacher may wish to make note of the errors so that they may be called to the individual's attention at a later time. In the second and third grades, errors will usually be corrected in a language skills period when the group will learn to use the correct forms in practice sentences and story telling. Glaring mistakes may be corrected at the time they are made if it is not done in a way to embarrass the child.

Some items may be recorded as room news. Others may lead to experience charts, problem solving, or merely the clarifying of concepts through further discussion and the sharing of ideas and information. Not all of the children's contributions contain possibilities of extending, but the teacher can make use of the situations that may grow into learning activities for individual and group growth.

LANGUAGE ATTAINMENT
GRADE THREE

Oral Expression

1. Continue habits and practices from Grade Two.
2. Continue improving fluency and extending vocabularies.
3. Continue stress on correct usage, such as went, gone, saw, seen, and other common errors made by students in the class.
4. Ability to tell original stories, relate experiences, and give brief reports.
5. Create short poems, plays, rhymes, and limericks as a group, and as individuals.
6. Improve social habits, such as introductions, telephone courtesy, manners, and group planning.
7. Present short programs.
8. Enrich vocabulary.

Written Expression

1. Continue the development of habits and practices from Second Grade.
2. Continue development of correct forms of greeting, thanks, etc.
3. Learn to do all written work neatly and accurately.
4. Teach the use of quotation marks, commas, hyphens, and exclamation points.
5. Extend ability to write creatively, stories, poems, reports and plays.
6. Develop habit of recognizing and correcting own errors in usage, both oral and written.
7. Teach proper form and placement of parts in writing letters and addressing envelopes.
8. Use period after abbreviations.
9. Extend use of capital letters for names of days of week, months of year, names of holidays, and main words in titles.
10. Evaluate all work and make a conscious effort to improve.

Listening

1. Recall specific information heard.
2. Evaluate enunciation of others.
3. Understand use of rhyme and rhythm.
4. Acquire a feeling for correct word forms and sentence elements and recognize sound-quality of words.

Text Books

1. **Basic Group:** No pupil text in Grade III.
   Teacher responsible for teaching skills listed above at rate suitable for group to achieve. The use of ditto sheets is more satisfactory as they can be selected to fit the children's needs. Drill and repetition are necessary but should be planned for usefulness, variety and need. More oral work and less written work is suggested.

2. **Regular Group:** Text, "Building Our Language"

3. Major Group: Text, "Building Our Language"
   Use tests as designated. More emphasis on creative work; encourage free writing, story telling, book reviewing, original dramatization, etc.

Activities for the Language Arts Program
and Correlation with Other School Activities

1. Story Idea. An idea box may help a child who finds it difficult to "make up" a story. In the box have slips of paper with short phrases or pictures of objects on them. The child may take out a limited number, three or four, and use these as a foundation for the story. Phrases may include:

a dark winter day	a trip with friends
three happy children	a queer little elf
a treasure chest	frisky circus animals
a surprise	a strange letter

2. Pictures may be: a ship, train, plane, big house, people, animals, landscapes, etc. - from "Grade Teacher", June 1958.
3. Drawing or painting a picture and then telling about it may be the easiest way to encourage a shy child to talk before the group.
4. Using puppets and standing behind the puppet stage will frequently help a shy child to speak louder and more clearly.
5. The teacher may write short stories to be kept in booklets on the library shelf. Children illustrate the pages after reading and telling the story. Some may like to make copies of the story for themselves. Example: "Down comes the snow.
   It makes cars go slow."
6. Guess the story. One or two children create a scene or dramatize a part of a well-known story, using available props. The group tries to identify the story. Build up a scene in a box top for class identification.

Usage of "Saw" and "Seen"

Tell the story of Mrs. Seen who is a very kind mother, always taking one of her children with her. List the "children": have, has, had, were, are, been, am, be, on the blackboard. Sometimes Mrs. Seen takes two children to help her, as has been. Mrs. Saw is just the opposite kind of mother. She always goes alone, so never say, "have saw"; we say, I saw. 419 Tips

Flannel Board

Place a flannel board in the library corner so it may be used when work is finished. Cut out pictures of people, animals, machinery from old magazines; glue small piece of flannel on back. Children can use these in making up stories or scenes from stories they read. Let each child tell his story to the class. 419 Tips

Experience Chart

Our class made jello at school.
We heated some water.
We used two cups of hot water for one package of jello.
We used five packages of jello and ten cups of water.

We cut up marshmallows and bananas.
We put in two cans of pineapple.
We put in three cans of fruit cocktail.
We stirred all of this.
Then we put it in a big pan.
The jello got hard.
We ate it on the day of our party..
My, my, it was good!

Use charts freely and make them exciting. They can tell a story, record an experience, provide directions, or list suggestions. Any subject is suitable. They can be teacher-made or done by the teacher and the children. They can be decorated by the children or they may pictorialize the subject with the use of drawings or cut-outs. Writing on cloth with chalk is most effective for special things. The chalk washes out of the cloth and makes it reusable. Real objects add interest. Pictures may be used to substitute for words. Try a flip chart where a picture or word on the chart is covered up by a flap of colored paper labeled "Look under here", or "Pick me up."

SPELLING

Regular

Follow the text, "The New Spelling Goals" or Basic Spelling Goals.

Basic

1. Complete second grade "New Spelling Goals" text before beginning third grade.
2. Emphasize the words children will be using in writing activities in all daily work.
3. Drill on the board allows teacher to see more easily where difficulty is encountered.

Major

1. Use text and supplement with words used in other subjects.
2. See Activities under Grade II.

Spelling Activities

1. Arrange spelling list in alphabetical order.
2. Clap number of syllables in each word.
3. Make small words out of large words in lesson. (Words, chosen by teacher, to be used.)
4. Teacher-made riddles; pupil-made riddles.
5. Cross-word puzzles. (Teacher-made of word list for the week).
6. Write a story, using as many of the spelling words as possible.
7. Words in the list that rhyme.
8. Words in the list that end the same.
9. Words in the list that are opposites.
10. Words in the list that are pronounced the same but spelled differently.
11. Arrange spelling list in columns of the one syllable words; two syllable words; three syllables, etc.
12. Draw lines through all silent letters of each word in list.

Alphabetizing

Use last year's telephone directory. Divide into two teams. Then write a dozen or more names from the directory on the blackboard. Object is to teach children to arrange names alphabetically, including the names of children's fathers under whose names the telephones are listed. This creates much enthusiasm. 419 Tips

WRITING

Third grade children will have had only manuscript writing in grades one and two so must be given special help in making the transition to cursive writing. Children will need to be permitted to use manuscript writing while learning cursive to help bridge the gap. Third grade teachers must be familiar with manuscript writing.

Difference between Cursive and Manuscript Writing

1. The letters slant.
2. The letters are joined together.
3. The letters are spread further apart.
4. The letters are made differently.
5. Pencil is not raised until the whole word is written.
6. Some letters are tall and some are short, just like manuscript.

FREEMAN'S Correlated Handwriting Practice Book No. 3, Columbus, Ohio: Zaner-Bloser

Basic Group

1. Wait until third quarter or fourth quarter to begin cursive writing.

Regular Group

1. Transition from manuscript to cursive about mid-year.

Major Group

1. Children can begin cursive writing in about nine weeks.

Examples of Letter Writing on Primary Grade Level

1. An Invitation
   Dear Mother
   Dear Father
   Come to PTA
   On Thursday
   At two o'clock.

2. A Thank You Note
   Dear Mrs. Smith
   Thank you for the good cookies.
   I had a nice Valentine party.
   Love
   Karen

3. A request

Dear Mother
May I have twenty-five cents for
My Weekly Reader?
Thank you.
Love
Bill

4. A Friendly Note

Dear Mary
I hope you are feeling better.
I miss you at school.
Love
Jane

Cards with Art Illustrations

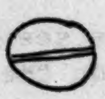
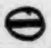
1. Sick cards to classmates.
2. Birthday card made and distributed by each pupil.
3. Christmas card.
4. Valentine greetings.
5. Easter card.
6. Mother's Day card.
7. Besides written messages, the use of To and From.

Examples of Copying Short Sentences from Blackboard and Illustrating with a Drawing

A cookie for Sally work play

A cookie for Spot up ↗ down ↘

A cookie for Tim come ← go →

big  little 

Showing Possession

Sally's Tim

Dick's boat

Jane's ball

Christmas Ideas - use imagination

Sally wants a ______________. (draw pictures)
Jane wants a ______________.
Dick wants a ______________.
I want a ______________.

Copying of classmates names for Valentine's. Encourage the addressing of own Valentines, using To and From.

Examples of Record Keeping

Diary: Today is Wednesday, March 5, 1959. It is snowing and blowing outside. We learned a poem about a snowman. Some of us made snowflakes. Some of us painted. We read a story about a snow party. We had fun at school.

Chart of School Family: Make self portraits; write own name.
Make pictures of school principal, teacher, nurse, cooks, custodian, and bus driver.
List with name and type of work.
List the number of girls and the number of boys.

Some Popular Subjects: What I Like to Do
My Family
When I Grow Up
A Pet I'd Like to Have

Writing

Write personal notes to children. Fasten them on their desks, slip them in the workbooks for a surprise when they prepare to go to work. Greet them on their birthday. Tell them you are glad they are back in school. Ask them to do a job for you. Anything for a surprise. Children will respond by writing notes to teacher.

I Can, Can You?

Children all like to have recognition for what they can do. If we start talking about the different things we can do, we will find an unlimited variety of abilities. Use bulletin board. Write, "I can, can you?" Extend this by having the children make representations of some accomplishment, writing under each the phrase which describes it. Assemble into a book, writing the appropriate phrase at the bottom of each picture. More advanced students can write short stories about what they can do and how it is done. Children might also assemble booklets of things they can do now, and things they want to do some day. Do the same kinds of things but use bulletin boards.

Look, Look!

Talk about the kinds of things we see when we look. Draw pictures of the things they see and, depending upon the ability of the child, write the story. "Look, Jane, look.
See the (picture of object)?"

As reading vocabulary grows, stories can be lengthened.

"Come, Jane, come.
Come and see the ______________.
The ______________ can run.
Look, Jane, look.
See it run."

Adaptations can be made in many different situations and at many different levels.

LITERATURE

Children respond eagerly and naturally to the rhythm of poetry (the tune of words) and the imagery and action of stories. A true test of their enjoyment is their request to "Read it again." Literature must be related to a child's experiences in order for him to recreate his own image of the author's words.

One learns to understand and appreciate good literature long before he learns to express his image of it or his feeling. Exact meaning of words is not essential to enjoyment, but one does need background to make it possible for him to experience vicariously the scene or feeling expressed.

The literature period needs to be relaxed and natural. Informal seating is best. The teacher's manner, plus her use of the right poem at the right time, creates enthusiasm for poetry.

Encourage memory of poems but do not force it. Favorite poems may be learned in class, all working together. Many short ones can be learned by a few repetitions. Not all children will be interested in learning the same poems, but all children should learn some.

Include a wide selection of material. Not all children respond to the same things and all children need to learn to enjoy many kinds.

Attainments for the Primary Grades

1. To develop a better understanding for everyday things through poetry and stories.
2. To broaden the child's horizon of the world about him.
3. To develop standards of appreciation of the beauty of words and the rhythm of poetry.
4. To learn to respond spontaneously to poems and stories.
5. To learn to interpret literary works to others through story telling activities, illustrations or dramatization.
6. To build a good repertoire of poems and stories - some to say from memory, or to tell, others to enjoy and know.

Suggested Material for the Literature Program

1. Poems, jingles, rhymes and stories about
    - People and places
    - Animals and nature
    - Work and play
    - Travels, real and imaginary
    - Magic and make-believe
    - Mother Goose
    - Beauty and wisdom
    - Humor
2. Dramatization
3. Original Expression
    - Creative, through pictures, rhythms clapped out, or acted out
    - Re-telling
    - Choosing descriptive words
    - Finding the rhyming words and using them other ways
4. Related Activities
    - Choral speaking
    - Illustrating
    - Story booklets
    - Class story books
    - Bulletin boards
    - Flannelgrams
    - Puppets
    - Vocabulary charts of new and interesting words

Literature Activities

Use a story or a group of stories in the literary readers as an introduction to a specific type of literature. After more extensive individual reading help, the class may want to summarize the characteristics of such stories and to share their findings with another class.

Identify with the children the characteristics of a certain type of literature and have them write their own stories using these characteristics.

See how many versions of a particular story the class can find. Discuss their likenesses and differences. Discuss their qualifications as to being good literature.

Sing poems and nursery rhymes, or clap to their rhythm.

Develop and read a poem cycle, grouping poems on some particular topic such as "Mice", "Fairies"; compare the way different poets express similar ideas.

Learn sayings from old tales and proverbs. Discuss their meanings. Compare the wisdom of folk sayings with modern sayings of advertising slogans.

Present short skits in which people from different books act together. Strive to portray the real characteristics of these people.

Make maps of the stories we read. Fairyland could show such places as the king's castle, the tunnels of the goblins, the rivers of the mermaids, the enchanted forest, and any other interesting location found in the story.

Encourage Creative Expression and Build Vocabulary

Use different types of materials; assemble a make-believe animal. Display it. Stimulate creative story telling or writing by such questions as, "Where do you think the make-believe animal lives?", "What can he do?", "Why?", "Does he have a name?". "How does he get from one place to another?"

Write the beginning lines of a short poem to describe a picture or an idea. Children try to finish the poem, either independently or with the teacher.

Be a "mood setter". Stimulate original stories with a picture from a magazine; e.g., a bare tree. Ask the children, "I wonder how the tree feels when it loses all its leaves". Or, "How does it feel to be in a fog?" "How do you think it would feel to fly to the moon?"

Motivate children to creative writing through movement. "Make yourself tall, small, round. How do you feel when you are tall?", etc.

Try writing a round-robin story where each child adds an incident.

Channel their fears by capturing the mood and writing about them.

Collect or draw pictures for a booklet to be placed in the library. Write captions for the pictures, if first grade; short sentences for second; and stories for third.

PRIMARY REFERENCES

Literary Collections in Story and Verse

Childcraft, Volumes 1, 2, 3, 4
Child's World, Volumes 1 and 2
My Bookhouse, Miller, Olive
Time for Poetry, Arbuthnot - Scott, Foresman
Anthology of Children's Literature, Arbuthnot - Scott, Foresman
Mother Goose, Sass and Dorne - Random House
A Picture Book of Mother Goose, Coward
Book Trails, Shepard and Lawrence
Golden Books
Better Homes and Gardens Story Book
Now We Are Six, A. A. Milne - Dutton
Told Under the Umbrella Books
Silver Pennies, Thompson
Chimney Corner Stories, Hutchinson - Minton - Balch & Co.
Poems, Rachel Field - Macmillan
Story and Verse for Children, Huber - Macmillan
Illustrated Treasury of Children's Literature, Martignoni-
Grossett and Dunlap
Under the Tent of the Sky, Breuton - Macmillan
A Small Child's Book of Verse, Doane - Oxford
419 Primary Ways, Normal Instructor

Choral Speaking

Let's Read Together Poems, Kindergarten and Primary - Row, Peterson
Choral Speaking, Hamphill - Educational Publishing Corporation

Magazines

Activities for Children
Children's Activities
Jack and Jill
Wee Wisdom
Humpty Dumpty
Ideals

Films and Tape Recordings - Film Strips

Refer to film library

Records

Poetry Time, May Hill Arbuthnot

Bulletins with Posters, Outlines and Good Teaching Suggestions

Independent Activities, Grade 1-6, 15¢ a copy, American Educ. Publishing
Such Interesting Things To Do , Independent Activities in Language
Arts for Primary Grades, Scott, Foresman & Co. Free
Developing Children's Word-Perception Power, Grade 1-3. Free
Scott, Foresman & Co.
Teaching Trends, Scott, Foresman & Co. Free
Primary Activities, Scott, Foresman & Co.
McKee Language Service Bulletin, Houghton Mifflin. Free
Supervisor's Notebook, Scott, Foresman & Co.

McKee Language Service Poster, Houghton Mifflin. Free
Ways in Which You Can Help Your Child With Reading, Row, Peterson. Free
Teaching Children to Read in the Primary Grades, Panel. Free
  McKee, Houghton Mifflin
Instructions in Children's Literature, Panel. McKee, Houghton Mifflin
Spelling as Developed in the Language Arts Programs of the New
  Alice and Jerry Books, Grades 1-3, Row, Peterson
Enrichment Activities for the Superior Child, Ginn
Let's Play a Game, Ginn
Language Arts Can Be Creative, published by Department of Kindergarten-
  Primary Education, NEA, $1.00 membership fee.
The Telephone and How We Use It, published by the Bell Telephone
  System. Free

Ditto Workbooks

See Catalog of: Ditto Company
Continental Press
Gal-Sten

Language Texts

First Grade - Monroe, Artley and Gray, We Talk, Spell and Write, Book I & II
Second Grade - Houghton Mifflin, Let's Talk, McKee, Harrison
Third Grade - Houghton Mifflin, Building Our Language, McKee, Harrison

Spelling Texts

My Word Book, or the New Spelling Goals
Supplementary Activities from A-Z Spellers, Helen B. Keller, Mary
  Farster, and May Seagoe

PRIMARY READING

LEVEL I
READING READINESS

Basic Text

Ginn Basic Readers, Games to Play, Revised Edition

Supplementary Texts

Getting Ready - Houghton Mifflin
Fun With Tom and Betty - Ginn
Before We Read; We Read Pictures; We Read More Pictures- Gray
Growing Into Reading; Your Child Learns to Read - Teacher's Reference,
  Scott, Foresman
Come and See; Come and Hear - Follett

Objectives

1. General objectives
    a. Orientation
    b. Language growth
    c. Concepts

d. Visual discrimination
e. Auditory perception and speech training
f. Kinesthetic development
g. Vocabulary building
h. Diagnoses of individual abilities
   (1) Language maturity
   (2) Personal and social maturity
   (3) Health records, age
   (4) Tests

2. Grouping Policy
   a. Nine weeks with class as a whole
   b. Observations by teacher
   c. Individual abilities
   d. Conferences with parents

Auditory and Visual Skills

1. Skills to be developed
   a. Auditory discrimination of rhyming elements
   b. Auditory discrimination of word beginnings
   c. Auditory discrimination of word endings
   d. Auditory and visual recognition of letters
   e. Visual discrimination of word forms
   f. Visual memory

Word Analysis

1. Understanding
   a. Likenesses and differences
   b. Left and right concept
   c. First and last
   d. Above and below
   e. Large and small
   f. Over and under
2. Learning letter names (not in alphabetical order)
3. Naming basic colors
4. Number concept through ten.

Comprehension and Interpretation

1. Understanding meanings
2. Following oral directions
3. Expressing ideas
4. Listening to stories
5. Anticipating what will happen next in a story
6. Re-telling a story; keeping the sequence of the story
7. Understanding the feelings of the story characters
8. Telling picture stories
9. Experience charts

Manipulative Skills

1. Using scissors
2. Using crayolas
3. Using pencils
4. Handling books

LEVEL II
PRE-PRIMER

Basic Texts

We Look and See; We Work and Play; We Come and Go; Scott, Foresman

Supplementary Texts

Skip Along; Under the Sky; Open the Door; High on a Hill; Row, Peterson
Tip; Tip and Mitten; The Big Show, Houghton Mifflin
Guess Who, Scott, Foresman and Company

Supplementary Materials

Come and Hear cards to accompany Come and Hear - Follett
Come and See cards to accompany Come and See "

Objectives

1. Maintenance of Level I skills.
2. Teach 58 sight words.

Auditory and Visual Skills

1. Matching similar objects
    a. Pictures
    b. Letters
    c. Words
    d. Phrases
    e. Sentences
2. Establishing sight vocabulary
3. Learning correspondence between printed and spoken word
4. Comparing printed word and manuscript writing
5. Forming images
    a. Visual
    b. Auditory
6. Basing memory
    a. Observation
    b. Visualization
    c. Sequence
7. Enriching oral vocabulary
8. Formulating sentences
9. Using narrative and expository expression
10. Observing individual words or phrases in a one-line reading unit
11. Observing visual details carefully
12. Establishing habits of looking at words and sentences in left to right serial order.
13. Improving articulation
14. Auditory perception of hard c, d, j, s, p, t, f, l, m, b, r, w, g, n, h, v.

Word Analysis

1. Word attack skills
    a. Recognizing general configuration of word

- b. Recognizing same word with capital and low case letters
- c. Using context clues as an aid to identifying word
- d. Noting and recognizing word form clues
  - (1) Likenesses
  - (2) Differences
- e. Developing structural analysis skills
  - (1) Recognition of words formed by adding s to known root words.
- f. Developing phonetic analysis skills
  - (1) Perception of rhyme
  - (2) Initial consonant sounds (See II. N)

Comprehension and Interpretation

1. Interpreting the main idea
2. Interpreting the story in sequence
3. Noting details and perceiving relationships
4. Identifying speaker and character spoken to
5. Anticipating outcomes
6. Forming associations
7. Making inferences
8. Recognizing emotional reactions and motives of story characters
9. Comprehending phrase and sentence meanings
10. Making judgments and drawing conclusions
11. Forming sensory images
    - a. Visual
    - b. Auditory
    - c. Kinesthetic
    - d. Tactile
12. Perceiving relationships
    - a. Place
    - b. Association through use
    - c. Sequence
    - d. Class
    - e. Size
    - f. Quantity

LEVEL III
PRIMER

Basic Text

The New Fun With Dick and Jane (with workbook) Scott, Foresman

Supplementary Texts

1. The Wishing Well; Day In and Day Out, Row, Peterson
2. Fun In Story, Winston
3. Peter's Family; At Home; Good Times With Our Friends, Scott, Foresman
4. Our School, Allyn and Bacon
5. Jack and Janet, Houghton Mifflin

Objectives

1. Maintenance of Level II skills
2. Teach 100 sight words
3. Teach initial consonant sounds as outlined in the Teacher's Guide for the New Fun With Dick and Jane

Auditory and Visual Skills

1. Identifying words in capitalized and uncapitalized initial-letter form.
2. Observing individual words or phrases in context.
3. Visual-auditory perception of rhyme.
4. Visual-auditory perception of initial consonants f, b, m, c, w, s, h, t, r, g, y, n, k, l, p, d, j.
5. Substitution of initial consonants.

Word Analysis

1. Recognition of words formed by adding 's to known root words.
2. Recognition of compound words made up of two known words.

Comprehension and Interpretation

1. Forming sensory images of taste.
2. Perceiving cause-effect relationships.

LEVEL IV
FIRST READER

Basic Text

The New Our New Friends (with workbook), Scott, Foresman

Supplementary Texts

We Three - Scott, Foresman
The New Round About - Row, Peterson
I Know a Secret - Winston
On Cherry Street - Ginn
Up and Away - Houghton Mifflin
Our Town - Allyn & Bacon

Objectives

1. Maintenance of Level III skills.
2. Teach 125 sight words; 52 attack words.

Auditory and Visual Skills

1. Continuation of all skills taught at the pre-primer and primer level.
2. Strengthen recognition and memorization of word forms by
    a. Association of printed word and its meaning
    b. Observing carefully all visual details
    c. Visual pictures of words
3. Develop phonetic-analysis skills by
    a. Perception of initial consonants
    b. Perception of final consonants s, n, p, t, d, m, l, ch, sh, th
    c. Recognition of initial consonant substitution
    d. Recognition of final consonant substitution
    e. Recognition of silent consonant in words
    f. Recognition of two-letter consonants representing one sound, th, wh, sh, ch

Word Analysis

1. Continuation of all skills taught at the pre-primer and primer level.
2. Ability to use initial consonant substitutions in attacking new words.
3. Ability to use final consonant subsitutions in attacking new words.
4. Ability to recognize difference in meaning and inflection by adding new endings to root words - s, 's, d, ed, ing.
5. Ability to recognize compound words made up of two known words.
6. Ability to recognize contractions.
7. Ability to use meaning clues in attacking new words.

Comprehension and Interpretation

1. Continuation of all skills taught at the pre-primer and primer level; stress sequence of ideas.
2. Ability to interpret ideas that are implied but not directly stated.
3. Ability to comprehend phrase and sentence structure and meaning.
4. Ability to perceive relationships in regard to
   a. Time
   b. Manner
   c. Size
   d. Space
   e. Number
   f. Class
5. Ability to organize and summarize ideas for the purpose of remembering.

LEVEL V
FIRST SECOND READER

Basic Text

The New Friends and Neighbors (with workbook), Scott, Foresman

Supplementary Texts

Down the River Road - Row, Peterson
We Grow Up - Macmillan
Come Along - Houghton Mifflin
Three Friends; What Next? (first part) - Scott, Foresman
We are Neighbors - Ginn
Down Singing River - American Book

Objectives

1. Maintenance of Level IV skills.
2. Teach 137 sight words; 92 attack words.
3. Continue development of extensive sight vocabulary.
4. Eliminate undesirable habits of lip movement.
5. Hold and handle book properly.
6. No marker.
7. Don't point.
8. Correct eye movements.
9. Recognize 85% of the previous vocabulary.

Auditory and Visual Skills

1. Develop the ability to recognize likenesses and differences by sight and ear.
    - a. Initial consonant sounds - b, c, d, f, g, h, j, k, l, m, n, r, p, s, sh, t, th, v, wh
    - b. Word structure
    - c. Phonetic parts - ar, aw, ay, er, ew, ir, or, oo (too), oo (book) or (work), ou, ow (slow), ow (now), oy, ur (turtle), ch, ck, d, g, kl, ll, m, n, ng
    - d. Final sounds - p, sh, t, th, y
    - e. Vowel sounds - a, e, i, o, u (short & long), ai, ea, oa, ay, ee
    - f. Sound of vowels followed by r, l, w
    - g. Initial blends - pl, pr, sl, sm, sn, sp, spl, spr, st, str, thr, tr, tw, bo, br, cl, cr, dr, fl, fr, gl, gr
    - h. Combination sh, ch, wh, th, ck
    - i. Continue use of rhymes
    - j. Recognize parts of compound words
    - k. Find little words in big words

2. Use
    - a. Picture clues
    - b. Context clues
    - c. Word-form clues (memory of word from recall of known words)
    - d. Phonetic clues
    - e. Associating sound and meaning with printed words

Word Analysis

1. Phonetic analysis
    - a. Visualizing a known word which looks like the new word except for the initial or final consonant element.
    - b. Associating appropriate sound or sounds with the consonant symbol which makes the new word different from the known word.
    - c. Blending the sound of this consonant element with the adjoining sound in the word whole, br, cr, dr, fr, gr, tr, bl, cl, fl, gl, pl.
    - d. Word analysis (structural analysis by adding s, 's, d, ed, ing. y, es, er, haven't (have not), weren't (were not), hasn't (has not), didn't (did not).
    - e. Doubling final consonant or changing y to i before adding endings.

2. Skills
    - a. Pronounce all words correctly.
    - b. Speak plainly and clearly.
    - c. Speak loudly enough to be heard.
    - d. Read slowly enough not to run words together.
    - e. Speak in cheerful and pleasing voice.
    - f. Do not get out of breath.
    - g. Use voice to make meaning clear - expression.
    - h. Continual building of a background of wide experience.

Comprehension and Interpretation

1. Interpretation
    a. See picture details
    b. Making inferences
    c. Making judgments
    d. Interpreting the main idea
    e. Visualizing implied actions
    f. Arranging events in sequential order
    g. Be able to read longer units with increased comprehension
2. Understanding
    a. Comprehending sentence meaning
    b. Anticipating outcome
    c. Drawing conclusions
    d. Organizing ideas
3. Objectives
    a. Enjoy literature
    b. To increase rate and accuracy of both oral and silent reading
    c. To be a good oral reader - read to class, other grades, teacher, friends, mother
    d. What to read - poems, plays, stories, children's magazines, children's papers, signs
    e. How to select books
    f. How to be a good silent reader - to find answers, to find in what order things happen, to skim, to judge others' ideas, to use books.

LEVEL VI
SECOND SECOND READER (2-2)

Basic Text

The New More Friends and Neighbors (with workbook) - Scott, Foresman

Supplementary Texts

What Next? (second part) - Scott, Foresman
Friendly Village - Row, Peterson
Around the Corner - Ginn
Over a City Bridge - American Book
On We Go - Houghton Mifflin

Objectives

1. Maintenance of Level V skills.
2. Teach 134 sight words; 181 attack words.

Auditory and Visual Skills

1. Promoting growth in word-perception skills.
    a. Strengthening memory of word forms based on (1) association of meaning with printed words; (2) careful observation of visual details; (3) visual imagery of words.
    b. Testing memory of word forms.

c. Developing phonetic skills

(1) Visual-Auditory perception of consonants, r l s blends, hard and soft c, hard and soft g, qu, squ, str, scr, spr, thr.

(2) Visual and auditory perception of vowels - short and long vowel sounds - vowels followed by r, l, w.

(3) Blending consonant sounds and vowel sounds.

(4) Auditory perceptions of syllables and accent

d. Developing phonetic understandings

(1) Silentness - consonants may be silent, silent consonants may be meaning or phonetic clues, silent vowels usually visual clues to vowel sounds.

(2) Variability - some consonants have variable sounds, vowel letters stand for more than one sound, different letter may represent same sound, word forms may be meaning clues.

(3) Principles for determining vowel sounds - position, silent vowels, "r" as a vowel controller, visual clue to a vowel sound usually follows the vowel letter in a word.

Word Analysis

1. Phonetic analysis in attacking new words

a. Consonant substitution

b. Blending consonant and vowel sounds

c. Silent consonants

2. Structural analysis in attacking new words

a. Recognizing words formed by adding s, es, d, ed, ing, n, en, er, est, with no change in root word.

b. Recognizing words formed by doubling final consonant, dropping final "e", changing "y" to "i" before adding an ending or suffix.

c. Recognizing contractions with one letter omitted.

d. Recognizing compounds made up of two known words.

e. Recognizing words formed by adding suffixes y, ly, or er.

f. Identifying root words in inflected or derived forms.

g. Using meaning clues to check structural analysis.

3. Combining structural and phonetic analysis.

a. Identifying and attacking a root word in inflected, derived or compounded form.

b. Using context clues to check combined structural and phonetic analysis.

4. Developing dictionary skills.

a. Understanding that a printed word may represent more than one meaning.

b. Using sentence context to determine appropriate meanings.

c. Recognizing alphabetical sequence or general alphabetical position.

d. Recognizing and identifying root words.

Comprehension and Interpretation

1. Interpretation
   - a. Ability to get the most out of what they read.
   - b. Ability to think about what they have read and react to it in terms of their own experiences.
   - c. Ability to interpret pictures in terms of what is happening.
   - d. Ability to form sensory images.
   - e. Ability to project themselves into story situation.
   - f. Ability to interpret action in light of characters, motives, and emotional reactions.
   - g. Ability to anticipate future happenings.
   - h. Ability to evaluate idea.
   - i. Ability to draw conclusions applicable to every day situations.

2. Promoting growth in interpretative skills.
   - a. Interpreting main idea.
   - b. Recognizing emotional reactions, motives, and inner drives of story characters.
   - c. Interpreting ideas implied but not directly stated.
   - d. Making inferences.
   - e. Recognizing story or plot structure.
   - f. Comprehending phrase and sentence meanings.
   - g. Interpreting figurative picturesque language.
   - h. Forming sensory images
     - (1) Visual
     - (2) Auditory
     - (3) Kinesthetic
     - (4) Touch, smell, taste
   - i. Identifying and evaluating character traits.
   - j. Making judgments and drawing conclusions.
   - k. Generalizing.
   - l. Forming associations.
   - m. Perceiving relationships - time, place, manner, sequence, size, space, number, part-whole, cause-effect.
   - n. Comparing and contrasting.
   - o. Rereading for specific information, verifying opinion, or proving a point.
   - p. Identifying and reacting to mood of passage, story, or poem.
   - q. Projecting ideas or mood in oral interpretation.
   - r. Strengthening memory based on observation, association, visual imagery, sequence, cause and effect relationships, part-whole relationships, classification.
   - s. Summarizing and organizing ideas for purpose of remembering.

LEVEL VII
FIRST THIRD READER (3-1)

Basic Text

The New Streets and Roads (with workbook) - Scott, Foresman

Supplementary Texts

Tall Tales (Part I) - Scott, Foresman
Through the Green Gate - Row, Peterson

Looking Ahead - Houghton Mifflin
Beyond Treasure Valley - American Book
Fun and Frolic - Heath
Finding New Neighbors - Ginn

Objectives

1. Maintenance of Level VI skills.
2. Teach 118 sight words; 283 attack words.

Auditory and Visual Skills

1. Auditory-visual perception of consonants.
    a. Single consonant beginnings (mat, fan).
    b. Silent consonants (sick, light)
    c. Consonant substitution
    d. Consonant blends (threw, scratch)
    e. Blending consonant and vowel sounds (ur, er)
    f. Variable consonants (soft and hard c and g)
2. Auditory-Visual perception of vowels
    a. Position of vowels help to determine short and long sounds, (hat, on, no, we)
    b. Vowels followed by r (car, burn, her)
    c. Vowel a followed by l, u, w, (taught, ball, paw)
    d. Vowel variables (oi, oy, ou, ow, oo as in food, book)
    e. Silent vowels (paint, rope)
    f. Schwa or unstressed vowel (ago)
    g. Visual clue to vowel sound usually follows the vowel letter (it, ice, bird, nib-ble, ti-ny)
3. Auditory-visual perception of syllables.
    a. Relationship of vowel sounds and syllables
        (1) Word or part of a word in which we hear one vowel sound is called a syllable
        (2) Single vowel is usually short unless it comes at the end of a word or an accented syllable (no, ba'by)
        (3) Silent vowels - if there are two vowels together in a word or an accented syllable, the first stands for a long vowel sound, the second is silent
        (4) If there are two vowels in a word or an accented syllable, one of which is final e, usually the first vowel is long and the final e is silent.
    b. Rules for syllabication.
        (1) If the first vowel is followed by two consonants, the first syllable usually ends with the first of the two consonants (lad-der, en-gine)
        (2) If the first vowel in a word is followed by a single consonant, that consonant usually begins the second syllable (la-dy)
        (3) If the word ends with le, the consonant preceding the le usually begins the last syllable (ta-ble)
4. Auditory-visual perception of accent in syllables.
    a. In words of two or more syllables, one syllable is stressed or accented more than the others (but'ton, lit'tle, i'vy, pa-rade')
    b. Accent affects vowel sounds in syllables.

   c. If the vowel is long in the second syllable, the second syllable is usually accented (con-fuse')
   d. Use context clues to help determine accent.

Word Analysis

1. Phonetic analysis.
   a. Consonant substitution
   b. Vowel principles
   c. Syllabication principles
2. Structural analysis
   a. Recognizing contractions in which one or two letters have been omitted (isn't, we'll)
   b. Recognizing root words
      (1) By doubling final consonant (tap, tapped)
      (2) Dropping final e (move, moving)
      (3) Changing y to i (baby, babies)
   c. Recognizing words formed by adding prefixes, un, de, re; suffices, ly, er, ish, ful, en.
   d. Identifying a word in compound form (understand)
   e. Identifying root words in inflected and derived forms (pound, pounding, pounded; hurry, hurried, hurries)
3. Context - aid in attacking new words.

Comprehension and Interpretation

1. Interpreting the main idea
2. Interpreting ideas implied
3. Comprehending phrase and sentence meanings
4. Recognizing story or plot structure
5. Recognizing emotional reactions as, excitement, thrills, happiness, ambitions, what and what for.
6. Interpreting figures of speech - as hungry as a bear.
7. Forming and reacting to sensory images, as touch, taste, smell, sight.
8. Anticipating what is going to happen or outcomes.
9. Identifying and evaluating character traits as sly, mean, etc.
10. Comparing and contrasting; tell how things or people are alike or unlike.
11. Perceiving relationships as sequence, time, place, cause-effect, part-whole, class.
12. Re-reading and skimming to get details or specific information.
13. Making judgments and drawing conclusions.
14. Drawing conclusions - if this happens, what should be done.
15. Summarizing and organizing ideas for the purpose of remembering.
16. Achieving effective oral interpretation.
17. Making inferences.
18. Strengthening memory based on observation, association, visual imagery, auditory imagery, sequence, cause-effect relationships, part-whole relationships.

Dictionary Skills

1. Comprehending simple definitions of meanings.
2. Understanding that a printed word form may represent more than one meaning.

3. Use context to determine meaning.
4. Recognizing alphabetical sequence.
5. Identifying root words.

LEVEL VIII
SECOND THIRD READER

Basic Text

The New More Streets and Roads (with workbook) - Scott, Foresman

Supplementary Texts

Climbing Higher - Houghton Mifflin
Tall Tales (Part II) - Scott, Foresman
Do and Dare - Heath
The Five and Half Club; If I Were Going - Row, Peterson
Friends Far and Near - Ginn
Along Friendly Roads - American Book

Objectives

1. Maintenance of Level VII skills.
2. Teach 141 sight words; 357 attack words.

Auditory-Visual Skills

1. Final e in words ending in ce, ge, and ve is not necessarily a clue to the preceding vowel sound (prince).
2. Final e after c or g is a clue to the soft sounds of c and g (fringe).
3. Final v is automatically followed by e in English spelling (twelve).
4. Visual clues to syllabication.
    a. Syllables in a word do not break between consonant blends or special two-letter symbols (th, ch, sh, leather, reply)
    b. The letter v may go with the vowel that precedes or follows it (e-ven, sev-en)
5. Visual clues to identify accented syllables in unknown words.
    a. In most two-syllable words that end in a consonant followed by y, the first syllable is accented and the second unaccented (ti'ny)
    b. In inflected or derived forms, the accent usually falls on or within the root word (fear'less)
    c. If de, be, re, ex, or a, is the first syllable in a word, it is usually unaccented (ex-plain')
    d. If the final syllable in a word ends in le, preceded by a consonant, it is unaccented (can'dle)
    e. If tion or ture is the final syllable in a word, it is unaccented (pic'ture, sta'tion)
6. Variable consonants - voiced s; unvoiced s (least, whose)

Word Analysis

1. Structural analysis.
    a. Inflected forms of words in which final f is changed to v before adding endings (loaf, loaves)

b. Derived forms of words in which the prefixes im and dis, or the suffixes, ness and less, are added to root words.
c. Combining structural and phonetic analysis in identifying and attacking a root word in inflected, derived, or compounded form.

Comprehension and Interpretation

1. Perceiving relationships of time, place, sequence, part-whole, cause-effect, class, and analogous.

Supplementary Materials and Enrichment Activities to be used at all Levels.

Workbooks and tests with basic texts
Tests (reading, intelligence, achievement, Weekly Reader, informal)
Games and riddles
Puzzles
Picture books and stories
Dramatic play
Sharing experiences
Art activities
Story telling
Films and visual aids
Music, records
Songs
Poems
Pictures
Phonetic drill cards
Flannel boards
Chalk board work
Excursions
Library corner

Not all supplementary books listed are stocked in all buildings. If a book the children have not read is not available, contact the Coordinators so books may be borrowed from another building.

At the beginning of the year, the previous level will be reviewed quickly. It is understood that some children may have to read several books on one level before they become competent enough to attack the next level.

SCIENCE & HEALTH

Third grade teachers should make use of the materials brought in by the children. As the interests of children at this age level reach out beyond their immediate environment, a definite science and health program is recommended.

Objectives for Science

To observe the distinguishing physical characteristics of living things.

To observe the habits of living things and changes in living things.

To classify according to a given basis.

To make generalizations on the basis of observed facts.

To develop concepts by comparing.

To use experiments to check the validity of inferences, and to discover solutions and problems.

To draw conclusions based on experimental data.

I. Plants and Animals in Autumn)
) 12 weeks
II. The Earth)

III. Way Out in Space)
) 12 weeks
IV. This is You)

V. Things That Help Us)
) 12 weeks
VI. Plants and Animals in Spring)

Basic Text

FRASIER, MacCRAKEN, DECKER, Singer Science Adventures, Syracuse, New York, 1962, L. W. Singer Company.

Follow the Teacher's Manual. Use the Science Kit. Do the experiments.

Objectives for Health

To enlist children's interest in establishing and maintaining good health habits.

To deepen interest in healthful attitudes about the body and to create desirable attitudes toward healthful living.

To develop the child's awareness of his role and the community's role in fostering safety.

To help boys and girls cope with personal feelings and to develop sound mental and social health.

Basic Health Text

BAUER, BARUCH, et al.; From Eight to Nine, Scott Foresman & Co., Chicago, 1962.

Suggested Program:

No outline of the material and time allotment is given as Health correlates with the third grade Social Studies material. Teachers should become familiar with introduction of Teacher's Edition and the topics to be taught, then use them at the appropriate times.

Suggested Areas in Which Health May Be Correlated with Social Studies Textbook Working Together

I. COMMUNITY LIFE
Working Together pp. 6-8 and Health - At Play pp. 118-150

II. HOW WE GET FOODS
Working Together pp. 41-91 and:

Health - Working Together pp. 106-107
Cathy Ann's Problem 108-109
At the Vegetable Fair 110-111
A Surprise for Mike 70-73
Different Ways to Serve the Same Food 74-75
Why Can't I Drink Coffee and Tea 164-165
What Can We Do to Have Good Posture 168-171
Why Does She Weigh More Than I? 174-179

III. WHO MAKES OUR HOMES
Working Together pp. 11-40 and Health - Family Fun pp. 122-123

IV. WHERE WE GET CLOTHING
Working Together pp. 91-124 and :

Health - Clothes Help to Protect You p. 22
If Your Clothes Catch on Fire p. 44
Many Surprises Unit LII pp. 50-60

V. HOW WE SEND AND RECEIVE MESSAGES
Does Watching Television Hurt Your Eyes? pp. 166-167

Films and Filmstrips for Science Units

Unit	Filmstrip or Film Title
Over the North Pole (6-11)	Continents and Oceans FS K35
	Our Earth FS 22
The Ocean (12-16)	Shellfish of the Seashores FS G26
A Desert (21-26)	Plant Life of the Desert FS K14
Air (26-34)	Air All Around Us MP1
Rocks (41-44)	How Rocks Are Formed FS 1A3
	(some frames are advanced)
Minerals Help Make Soil (50-56)	What is Soil? MP 32 and FS G37
A Picture in Rock (57-59)	Story of Fossils FS 1A16
Trees in Autumn (60-66)	Autumn is Here FS J21
	Telling Trees Apart FS H22
Some Birds Migrate (67-71)	The Story of Robin FS G11

Unit	Filmstrip or Film Title
Other Animals in Winter (72-74)	Winter is Here FS 47
Desert Animals (75-79)	Small Creatures of the Desert FS K13
	Reptiles of the Desert FS K12
	Mammals of the Desert FS K11
The Earth and the Sun (89-91)	Our Earth in Motion MP 40
	The Earth in Space FS W28
	The Sun and Its Planets FS W29
	The Sky Above Our Earth FS W24
Days and Hours (92-97)	Night and Day FS K38
	Our Earth in Motion MP 40
Summer and Winter (98-101)	Autumn Is Here FS T46
	Spring Is Here FS T49
	Summer Is Here FS T47
The Moon (102-109)	Earth Satellite FS W30
	The Moon FS 23
	The Sky Above Our Earth FS U1 W24
	Our Earth in Motion MP 40
Man Made Moons (110-115)	Earth Satellites--
	A Man Made Moon FS P6
The Sky At Night (116-118)	The Sky Above Our Earth FS U1 W24
	The Stars FS S26
Your Blood (119-122)	Keeping Well and Happy FS D31
	Keeping Neat and Clean FS UI2
	How the Heart Works FS C47
Inside You (123-128)	Foods For Health FS Y38
	Proper Foods FS UI4
Your System of Nerves (133-135)	Nervous System FS IA44
How Safe Are You?	Bicycle Safety FS J20
	Safety on Two Wheels FS GI5
	Safe Way to School FS K23
	Home Safety FS C51
Wires for Electricity (153-157)	Wires for Electricity
	Code to Electricity FS B19
Experiments with Magnets	Magnets FS E18
	Michael Discovers the Magnet MP 23
Sounds (166-169)	How We Hear FS C2
	How Your Ears Work FS L50
Many Machines (170-175)	Levers FS D49
	Tools to Help Us Work FS W25
	Machines that Move the Earth MP 20
	Simple Machines FS G29
	Elementary Science Chart Kit 46
	(sound) (Electricity)
	(Magnets) (Machines)
How Things Change (176-181)	Things in the World Change FS J40
Farm Animals (182-186)	Animals to Know FS A25
	Animals in Spring MP 3
Birds in Spring (187-193)	Birds and Homes A and B FS A38
	FS A33
Squirrels (194-198)	Grey Squirrel MP 16
Jane's Garden (205-209)	Plant Life at Work MP 26
	Plants Grow and Change FS K28
	Study of Plant Growth Kit 16

Science and Health Revision Committee - 1964: Shirley Larson, Chairman, Fairview; Cora Lemaster, Hebard; Frederica Beeman, Rossman; Margaret Baillie, Goins; Angie Talagan, Goins; Rhae Ankeny, Henderson.

ART
Third Grade

Children in Third Grade should achieve some measure of success in working with each of these mediums.	Do not limit yourself to these suggestions. Try ways of your own. Encourage individuality of expression		Always explore a medium before you present it.	
	KNOWLEDGES AND SKILLS			
Crayon and Chalk	Finger Painting	Painting - Tempera	Paper Cutting and Construction	Clay and Papier Mache
1. Recognition of: a. Primary hues b. Secondary hues c. Value (light and dark) d. Intensity (dull and bright) e. Warm and Cool colors 2. Recognition of variety in lines: a. Straight b. Curved c. Wavy d. Spiral e. Zig-zag, etc. 3. Recognition of variety a. Rough b. Smooth c. Soft, etc. 4. Recognition of shapes and forms: a. Circle b. Square c. Cone d. Cylinder, etc. 5. Use chalk on wet and dry paper. 6. Ability to blend colors. 7. Increasing understanding of: a. Contrast b. Repetition c. Variety 8. Ability to work from memory and imagination.	1. Ability to: a. Prepare material b. Control medium c. Experiment freely with hand and arm movements 2. Ability to make all-over pattern 3. Ability to fill space harmoniously 4. Increasing ability to achieve: a. Variety b. Texture c. Repetition 5. Development of ability to sense, feel and express simple rhythms.	1. Manipulate paint to: a. Make new colors b. Make colors lighter c. Make colors darker d. Make colors dull 2. Knowledge of: a. Spatter painting b. Sponge painting c. Vegetable printing d. Stick printing 3. Ability to mix secondary colors. 4. Ability to care for materials and tools properly. 5. Efficiency in clean-up operations. 6. Increasing ability to: a. Organize more complex composition b. Use color harmoniously c. Indicate simple perspective by putting distant objects higher and smaller.	1. Cutting free-hand a. Contour b. Several folds 2. Constructing forms from: a. Circles, strips, geometric forms, tubes, boxes, etc. 3. Ability to: a. Fringe, notch, curl, scallop 4. Ability to cut from folded paper: a. Several separate units b. Several connected units 5. Weave paper strips of two or more colors developing simple pattern. 6. Ability to use slot construction. 7. Lettering for posters. 8. Simple stencil cutting 9. Making of paper sack figures and animals.	1. Ability to ma ipulate clay a. Rolling b. Pressing c. Squeezing d. Pinching out, etc. 2. Ability to: a. Model from the whole b. Build with coils c. Model in r lief (tile 3. Ability to ma ipulate papier mache a. Modeling w strips ove crushed pa b. Applying strips ove object or clay form. 4. Ability to m substantial pieces that sturdy and w not break easily.

SUGGESTED PROCEDURES

Crayon and Chalk

1. Review work of lower grades on:
   a. Color
   b. Line
   c. Texture
   d. Form
2. Demonstrate:
   a. Chalk on dry paper
   b. Chalk on wet paper
   c. Color blending
3. Show how to have:
   a. Variety in line & form
   b. Contrast in color
   c. Repetition
   d. Shading
4. Teach crayon stenciling
   a. Cut simple stencil
   b. Crayon around edge
   c. Pull crayon onto paper underneath with eraser
5. Draw figures showing action, with side of crayon.
6. Experiment with textures by crayoning on paper placed on rough surface.
   a. Screen
   b. Corrugated paper
   c. Sandpaper, etc.
7. Show crayon resist
   a. Make crayon picture
   b. Paint over it with diluted tempera
8. Protect work areas when using chalk.

Finger Painting

1. Protect children's clothes with aprons or old shirts.
2. Protect desks with single large sheets of newspaper folded in middle.
3. Use desks grouped into fours, or large table.
4. Furnish each center with can of water, sponge, and can of finger paint.
5. Have children write names on dull side of paper.
6. Wet that side, then shiny side, adding a few extra drops. Sprinkle paint lightly all over paper.
7. Have children do movements of sawing, dusting, stirring, etc. in air with hands & arms before they paint.
8. Encourage experimentation with various parts of hand and arm.

Painting - Tempera

1. Use classified section of newspaper or paper to practice on.
2. Use desks grouped together, table or floor for painting centers.
3. Protect working surfaces with newspaper; have aprons or old shirts to protect clothes.
4. Furnish each center with several colors and a brush for each.
5. Mix tempera to the consistency of cream.
6. Use large paper (18x24") for painting.
7. Encourage large free expression.
8. Paint directly on paper.
9. Plan clean-up activities before painting is begun.
10. Encourage experimentation to find out how to:
    a. Mix colors
    b. Make colors lighter, darker and duller.
11. Experiment with tempera on wet paper. Let colors run together.

Paper Cutting and Construction

1. Make large color chart for room, using colors found in package of assorted poster or construction paper.
2. Use magazines, newspaper or paper for experimentation whenever possible.
3. Show how to draw and cut letters from rectangles by using guide strip for straight-sided letters. "M" and "W" are extra width. In cutting numbers, "5" is "2" reversed; "6" is "9" reversed.
4. Show how to:
   a. Cut & curl flowers, petals, leaves, etc.
   b. Construct animals adding mane, tail, horns, etc. using fringing, curling, etc.
5. Demonstrate method of making doll and dress and animals from paper sacks.
6. Experiment with mask making by use of paper sacks and paper plates.

Clay and Papier Mache

1. Have working surface covered with newspaper.
2. Show how to keep clay at good working consistency.
3. Demonstrate:
   a. Working from whole
   b. Working with coils
   c. Tile making
4. Teach proper care in storing clay
   a. Make depression in each ball of clay. Add few drops of water and seal over.
   b. Cover with wet cloth, ther newspapers.
   c. Put broken pieces in bag and pound to powder for re-use.
5. Show method of winding paste-covered strips over crushed newspapers to make papier mache objects.
6. Show how to use strip over dishes or clay forms to make papier mache objects.

RECOMMENDED ACTIVITIES

Crayon and Chalk	Finger Painting	Painting - Tempera	Paper Cutting and Construction	Clay and Papier Mache
1. Correlate with other subjects by: a. Illustrating stories, social studies, events at home and school, etc. 2. Create imaginative pictures (under the sea, jungle life, etc.) 3. Make: a. Murals b. Class books c. Booklet covers d. All-over design e. Border design f. Indian design 4. Design in a circle a paper plate design (may be painted with tempera and shellacked). 5. Design Easter eggs with crayon before dyeing. 6. Use side crayon to do quick figure sketches showing action. 7. Do self-portrait.	1. Shellac and use as mats. 2. Make booklet covers. 3. Use for weaving strips. 4. Use for free-hand cutting. 5. Select best part of design, mount on contrasting paper for booklet cover or card for special days. 6. Cover boxes and cans for gifts. 7. Use as background mat for other pictures.	1. Use as free time activity occasionally. 2. Make background for murals. 3. Paint large (18x24") picture from memory and imagination. 4. Use paint to decorate clay and papier mache objects. 5. Make spatter paint a. Booklet covers b. Cards for special days. 6. Use potato printing to a. Decorate booklets b. Apply all-over design to wrapping paper, wall paper and tissue paper. c. Experiment with stick printing by use of: spools small blocks pencil tops, etc. 7. Use tempera paint (thin) as wash over crayon.	1. Make cut-out lettering for simple signs, labels etc. 2. Use lettering on posters 3. Make paper sculpture: a. Flowers b. Birds c. Animals 4. Make paper sack dolls to use in connection with reading and social studies. 5. Use accordian strip folds to make figures stand out from maps, murals or bulletin board. 6. Make large individual folders for art work. 7. Use variation in card folds. 8. Make large class books with accordian folds. 9. Use pop-up construction for special day cards. 10. Make envelopes for cards. 11. Make stand-up animals by using slotted bases in which to put feet. 12. Use slot principle for adding tail, ears, horns, etc. to animals and figures.	Clay: 1. Correlate with oth school subjects by a. Modeling object and figures for dioramas. b. Modeling and de rating Indian b c. Making and deco rating tiles, Papier Mache: 1. Do seasonal activi such as: a. Christmas tree ornaments b. Halloween masks c. Easter eggs 2. Puppet heads 3. Bowls or plates 4. Fruit and vegetabl 5. Indian rattles 6. Indian beads and other jewelry.

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Art Committee:

Helen Keller
Alice Crossan
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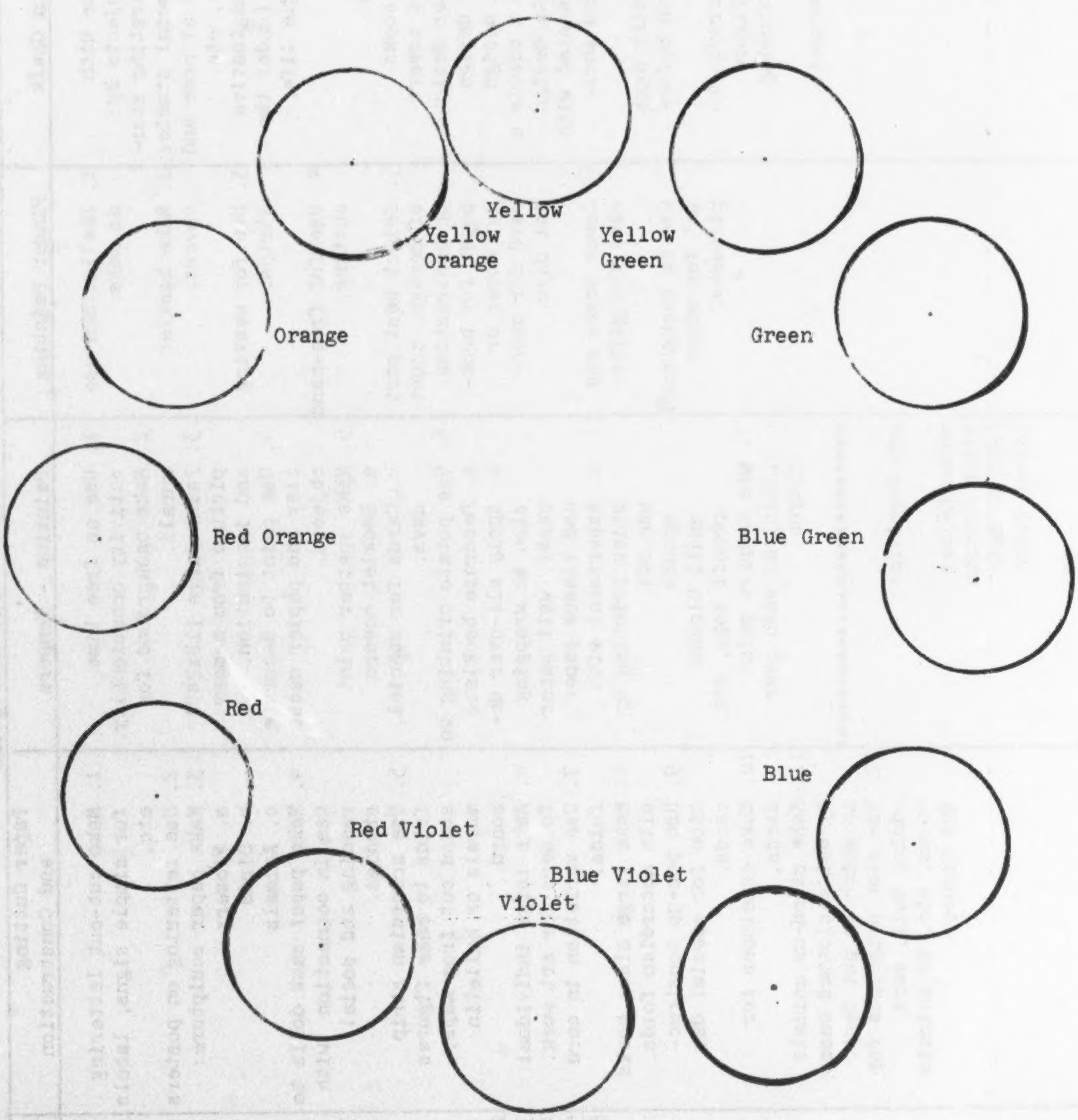
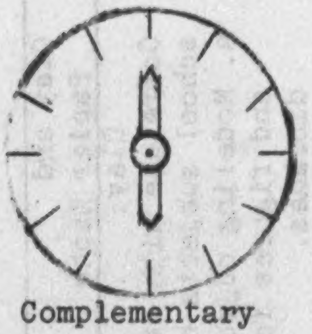
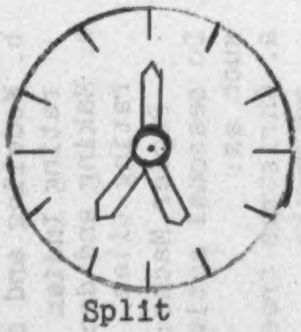
American Crayon Company
Sandusky, Ohio

COLOR CHART


Yellow
Yellow Orange
Yellow Green
Orange
Green
Red Orange
Blue Green
Red
Blue
Red Violet
Blue Violet
Violet


Complementary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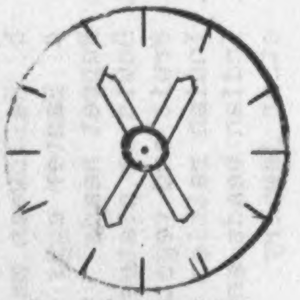
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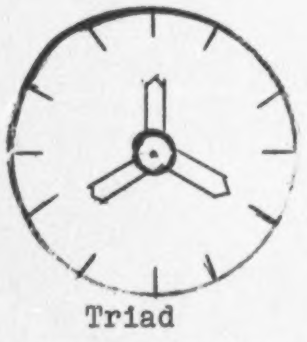
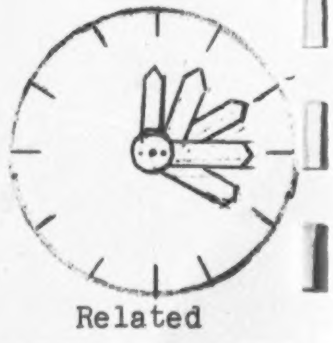

Triad


Related

CHALK DRAWING

Materials and Tools to Use

1. Old newspapers to protect desk surfaces.
2. Sufficient construction paper in dark colors, such as blue, purple, green, gray, and brown or black.
3. A large wooden box of assorted, soft, brightly colored chalk.
4. A sponge, if paper is to be dampened before drawing. (optional)
5. Fixative to spray over drawings to prevent rubbing off. (optional)

Teacher Preparation before Class Time

1. Break chalk into pieces. A long stick may be broken into fourths.
2. It is an advantage to use separate boxes for each color to be used and to replace chalk in these boxes after drawing.
3. Prepare to help children select not more than four colors which will look well together on the color of paper chosen.

Responsibilities of Children

1. Children needed to help will include -
   one to pass and collect chalk;
   one to pass newspapers;
   one to pass the wastebasket and clean desk tops, if necessary.

2. During the lesson, do not permit any child to leave his seat. This prevents much of the "mess" of using colored chalk and damage to clothing, hair and materials. If a child should leave his seat, simply pick up his paper and do not let him work with the group for that Art period. This is "painless" and forms a lasting impression.

3. Groups of three or four may wash up at a time, thus eliminating crowding.

Steps in Presenting the Skill

1. One picture is worth a thousand words. Fasten a piece of the construction paper to the bulletin board or blackboard and draw a sample picture, explaining how to cover the larger areas with the sides of the chalk, how to blend the colors together, and how to keep from getting arms into the chalked-over areas. One or two previously completed pictures on display will also be helpful.

2. Instruct the children to "work large", covering most of the paper.

3. Individual help may be given, but let the children be "creative". Don't expect miracles the first time you use colored chalk, since it is less familiar to use than crayon. Keep the first designs simple. Repeat lessons may go into greater detail.

Suggested Activities Involving Use of the Skill

1. Chalk drawings correlate well with science or they may simply be art lessons.

2. They make very colorful room decorations, but unless fixative is applied, they cannot be used for covers or other purposes.
3. Designs adaptable to colored chalk include
    - tropical birds
    - flowers
    - fish
    - under-the-sea pictures
    - Fantasies, stressing simple lines and color

FINGER PAINTING

Materials to Use

1. Finger painting paper
2. Finger paint
3. Newspapers
4. Cans of Water
5. Sponges
6. Clean rags
7. Aprons or old shirts to cover clothing

Teacher Preparation before Class

1. Cutting paper to desired size.
2. Fill cans with water.
3. Arrange desks in groups of four or five.
4. Assign a leader for each group.

Responsibilities of Children

1. Covering desks with newspapers.
2. Passing paper.
3. Writing name on dull side of finger painting paper.
4. Cleaning up.

Procedure

We discuss the various types of movements, how to use the fleshy parts of the thumb, palm, arm, fingers, and side of hand. Imaginary strokes may be made in the air enabling the children to feel the various motions.

Each child writes his name on the dull side of the paper. He sponges the dull side first, being sure to wet edges and corners. Then he wets the glazed side thoroughly, adding a few extra drops in the center of the paper. He selects his color and sprinkles the paint all over the paper.

The powdered paint is worked into the wet paper, using big muscular movements until the paint is smooth. By this time the child has the feel of the paint and is ready to create a picture of his own.

When the picture is finished, the child puts it aside to dry.

Finger painting designs may be used to cover scrapbooks, book-ends, waste-baskets, letter boxes, or mounted.

Children can also use a small piece of sponge, squeezing the water out of it onto the paper and smoothing water over their paper with their hands. It is recommended that they use one hand for painting and keep the clean one to dip into the water can.

PHYSICAL EDUCATION PROGRAM
Kindergarten through Third Grade

Growth is a continuous process - an emerging - an unfolding. At no time does a child abruptly complete a particular stage of development and begin the next. Neither is there a time when all children in a group are at exactly the same stage of growth.

Any classification into groups along the route of growth is artificial. The following chart is merely a device to help give a picture of activities that seem to suit the changing needs of children. The subdivisions and classifications used serve as convenient labels for periods of growth through which children gradually move, each child holding to a path that is his alone.

What They are Like	What They Need Opportunities	What To Do
Their large muscles (trunk, legs, arms) are more developed than the smaller muscles (hands and feet).	To experience many kinds of vigorous activities that involve many parts of the body. To engage in many developmental activities for small muscles.	Activities such as: Hanging, running, jumping, climbing, dodging or throwing at an object. Bean Bag Toss, Jacks, Bouncing balls, Hopscotch, O'Leary
They have a short attention span.	To engage in many activities of short duration.	Choice of activity where a child can change frequently and activities that can be started quickly, such as: Magic Carpet, Pincho, Hill Dill and stunts.
They are individualistic and possessive.	To play alone and with small groups. To play as an individual in larger groups.	Individual activities such as: throwing, catching, bouncing, kicking, climbing, stunts, running, hopping, skipping, building blocks, jumping. Dance activities which allow for expression of self, such as clown, aviators, firemen, cops, aeroplanes. Activities which may use small numbers of children, such as: Stride Ball, Cat and Rat, Hill Dill, Cowboys and Indians, Tag. Singing games such as: Lobby Loo, Bluebird, Sing a Song of Sixpence.
They are dramatic, imaginative and imitative.	To create and explore. To identify themselves with people and things.	Invent dance and game activities such as: cowboys, circus, Christmas toys; work activities such as: pounding, sawing, raking and hauling. Other play activities, farmers, postmen, grocers, elevators, bicycles, leaves, scarecrows.

What They are Like	What They Need OPPORTUNITIES	What They Do
They are active, energetic and responsive to thythmic sounds.	To respond to rhythmic sounds such as, drums, rattles, voice, nursery rhythms, songs and music.	Running, skipping, walking, jumping, galloping, dodging, swimming. Singing and folk games such as, Oats, Peas, Beans and Barley Grow; Farmer in the Dell, Nixie Polka.
They are curious and want to find out things.	To explore and handle materials with many types of play.	Using materials, such as balls, ropes, stilts, bean bags, bars, ladders, trees, blocks. Games and activities, such as hiking, Run Sheep Run, Huckle Buckle Bean Stalk.
They want chances to act on their own and are annoyed at conformity..	To make choices, to help make rules, to share and evaluate group experiences.	Variety of activities with minimum of rules, such as Center Base, Exchange, Midnight and Red Light. Make-up activities, dances and games.
They are continuing to broaden social contacts or relationships.	To cooperate in play and dance; to organize many of their own groups.	Group games, such as simple forms of Dodge Ball, Kickball. Dance and rhythmic activities, such as Gustaf's Skoal, Dance of Greeting, Bow Belinda.
They seem to be in perpetual motion.	To play many types of vigorous activities.	Running, jumping, skipping, galloping, rolling.

Acknowledgement is made of permission for partial reprint of the bulletin, PHYSICAL EDUCATION FOR CHILDREN OF ELEMENTARY SCHOOL AGE, A Report of the National Conference on Physical Education of Elementary School Age, and THE ATHLETIC INSTITUTE.

ARITHMETIC ENRICHMENT

Third Grade

Different Methods of Subtraction

If the gifted child is proficient in each of these methods, he will have more opportunity for developing insight.

1. The take-away, borrow, or decomposition method:

71	5 from 11 leaves 6
-35	7 becomes 6
36	3 from 6 leaves 3

In this process the ten's figure in the minuend is reduced by one.

2. The take-away, carry or equal addition method:

71	5 from 11 leaves 6
-35	3 becomes 4
36	4 from 7 leaves 3

In this process a number is added to the subtrahend to produce the minuend and the ten's figure in the minuend is decreased by one.

1. A Clock Puzzle

Jack called to his mother one night at 1:50 a.m. (after midnight), saying he could not sleep. His mother asked, "Have you been awake a long time, or did you just wake up?"

"I have heard the clock strike 28 times," Jack answered.

If the clock strikes the hours and half hours, how long had the boy been awake?

Answer: At least since 10:30 p.m., or 3 hours and 15 minutes.

2. A Rancher Counts Sheep

The following problem can be adapted by counting by tens and by using a smaller number of sheep.

One fall day a large herd of sheep was being driven from a forest reserve in Wyoming. The rancher, who owned the sheep, was counting them as they passed between his jeep and a grove of trees. In his hand he held some rocks. Each time he counted to 25 he dropped a rock in a basket. When all the sheep had passed, he found that he had 146 rocks in the basket. How many sheep were in the herd?

3. Find the Missing Number

A.	1.	250	400	550	?	(answer, 700)
	2.	125	?	475	650	(answer, 300)
	3.	?	225	450	675	(answer, 0)
	4.	0	250	?	750	(answer, 500)
	5.	950	700	450	?	(answer, 200)
	6.	980	?	900	860	(answer, 940)

B	1.	980	1,005	1,030	?	(answer, 1,055)
	2.	950	1,025	1,100	?	(answer, 1,175)
	3.	2,000	1,850	1,700	?	(answer, 1,550)
	4.	2,100	1,850	1,600	?	(answer, 1,350)
	5.	975	1,150	1,325	?	(answer, 1,500)
	6.	850	?	1,150	1,300	(answer, 1,000)
	7.	2,025	?	1,575	1,350	(answer, 1,800)
	8.	?	375	500	625	(answer, 250)
	9.	135	180	?	270	(answer, 225)

4. Number Stunt

Abler pupils will be challenged in learning how to do the following number stunt, and also in analyzing it to see why it works:

Want to make a friend think you are a whiz in arithmetic? Tell him that you can always reach 100 first if you start with 12 and the two of you take turns adding any number up to 10 at each turn.

Here is the trick: Every time your friend adds a number, you quickly subtract that number from 11. The answer tells you how much you are to add. (Don't tell your friend how you decide what number you will add.)

For example:	You always start by adding 12	12
	Your friend might add 5	5
		17
	You think, 11-5 = 6. you add 6	6
		23
	Your friend might add 2	2
		25
	You think, 11-2 = 9. You add 9	9
		34
	Your friend might add 7	7
		41
	You think, 11-7 = 4. You add 4	4
		45

You keep going like this and you will always be the one to reach 100. Remember that he can never add a number larger than 10.

Explanation: Only the very brightest children will discover why the trick comes out as it does. 12 plus the 8 elevens that are added always bring the sum to 100.

5. The Nail Board

Materials needed to make device:

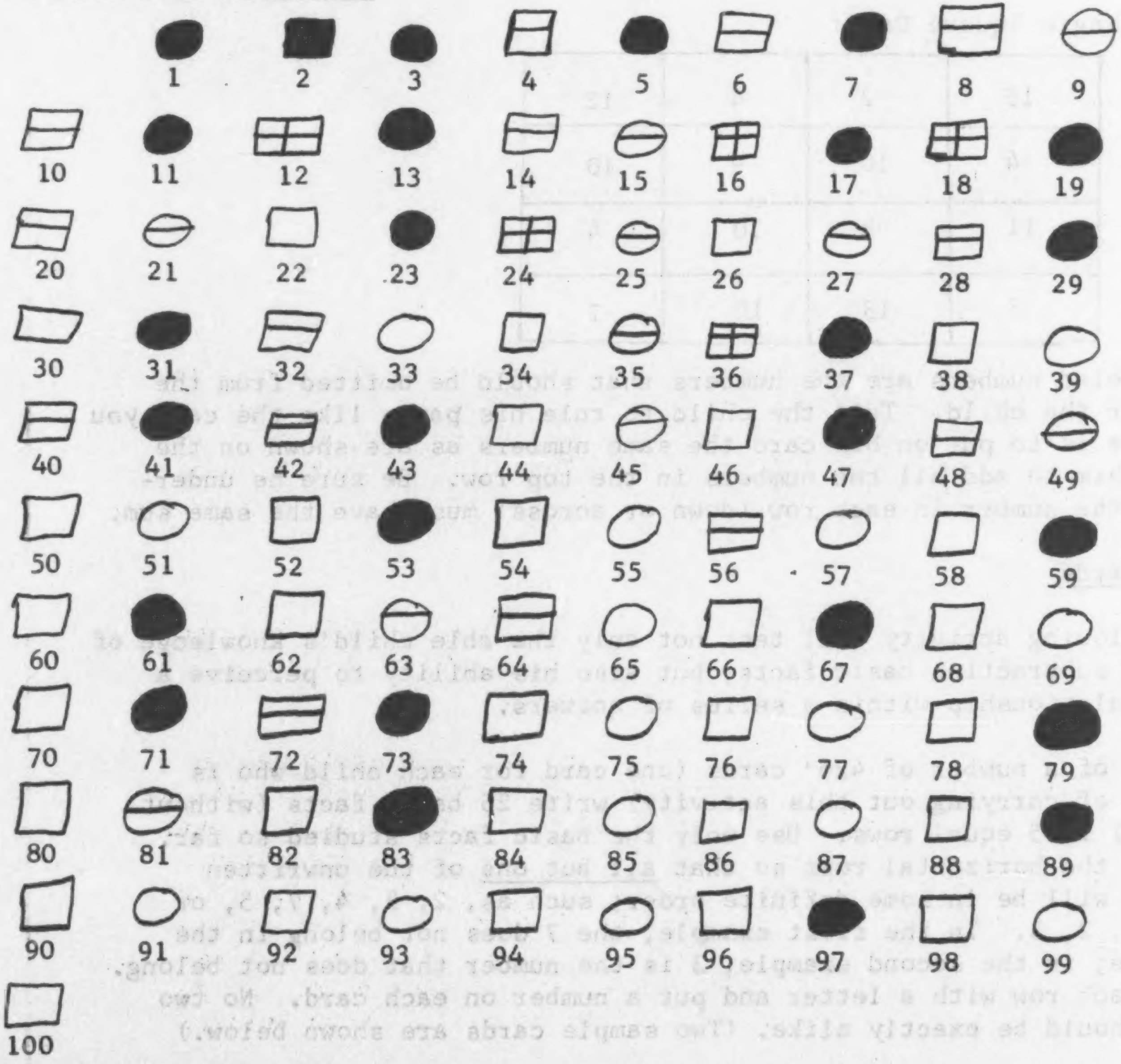
1. Plywood, 22" x 22", or larger if preferred
2. Finishing nails or screws (if you use screws, use ¼" screws for cardboard discs).
3. Cardboard discs 1 3/4" in diameter 50 ea.
   Cardboard squares 1 3/4" x 1 3/4" 50 ea.
4. Paint or varnish (not necessary)

Use:

As the Hundred Board for mastery of whole numbers.

1. Circles represent odd numbers; squares represent even numbers. Black circles and squares represent prime numbers (numbers which cannot be factored); white ones represent composite numbers (numbers which can be factored).
2. Circles or squares represent parts of basic multiplication (division facts) have lines across them. One line means the number has one distinct pair of factors, as 15 = 3x5. Two lines means the number has two pairs of distinct factors, as 12 = 2x6 or 3x4. (How to use it as "The Hundred Board" was taken from The Arithmetic Teacher, March 1956.)

Sample of Hundred Board


1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39
40 41 42 43 44 45 46 47 48 49
50 51 52 53 54 55 56 57 58 59
60 61 62 63 64 65 66 67 68 69
70 71 72 73 74 75 76 77 78 79
80 81 82 83 84 85 86 87 88 89
90 91 92 93 94 95 96 97 98 99
100

With this Board it is easy to see the pattern of odd and even numbers. Prime and composite numbers stand out. Numbers that are parts of basic multiplication (division) facts are clearly marked. The pupil touches and counts by 2's, 3's, 4's,....By spanning or measuring off with two hands, he learns to put groups together and to take groups apart. Basic facts cease to be just symbols on paper. They can be proved with things he can see and touch.

6. Magic Squares

This activity will use addition of one-figure and two-figure numbers and subtraction of two-figure numbers. The purpose is to fill in missing numbers in rows so that the sums for each row will be the same both vertically and horizontally.

> Rule 4x6" cards into rectangles (four rows of four rectangles each). Arrange numbers, one in each rectangle, in such a way that, when added, the answers for each row will be the same vertically and horizontally. It will be necessary to fill all the squares in the top row with numbers because that is the only way the child can find out what the sum of each row should be. In the other horizontal rows, omit two of the numbers.

Sample of a Magic Square Card:

15	2	4	12
4	10	9	10
11	8	10	4
3	13	10	7

The circled numbers are the numbers that should be omitted from the card made for the child. Tell the child to rule his paper like the card you gave him. He is to put on his card the same numbers as are shown on the card. Tell him to add all the numbers in the top row. Be sure he understands that the number in each row (down or across) must have the same sum.

7. Puzzle Cards

The following activity will test not only the able child's knowledge of addition and subtraction basic facts, but also his ability to perceive a pattern of relationship within a series of answers.

> On each of a number of 4x6" cards (one card for each child who is capable of carrying out this activity) write 25 basic facts (without answers) in 5 equal rows. Use only the basic facts studied so far. Arrange the horizontal rows so that all but one of the unwritten answers will be in some definite order; such as, 2, 3, 4, 7, 5, or 8, 6, 4, 2, 3. In the first example, the 7 does not belong in the sequence; in the second example, 3 is the number that does not belong. Label each row with a letter and put a number on each card. No two cards should be exactly alike. (Two sample cards are shown below.)

Card 3

A.	5-4=	5-3=	5+2=	1+2=	5-1=
B.	5-1=	1+2=	2-1=	3-1=	3-2=
C.	5+2=	7-2=	4+3=	5-2=	2-1=
D.	1+1=	5-4=	3-1=	7-6=	3+2=
E.	2+1=	3-2=	7-4=	5-2=	1+2=

Card 4

A.	5-4=	7-4=	3-1=	4+1=	2+5=
B.	1+6=	2+3=	4+3=	2+5=	3+4=
C.	7-5=	5-3=	2-1=	3-1=	1+1=
D.	1+1=	5-2=	7-3=	7-4=	1+4=
E.	1+2=	3-1=	5-1=	2+3=	7-1=

It would be well to keep these cards in a file then let an able pupil choose one to work on. Explain to him that the answers to the facts in each row will form a regular pattern if he leaves out one of the facts that appears in the row. Warn him that one row may not have the same kind of pattern as another row, so explain that the first thing he must do is discover what the pattern is, in the row he is working on, by comparing one answer with another. Then he is to name the one fact in each row that spoils the sequence of answers. He will do this on paper, writing on his paper the number of the card he is working on, and then printing the letters A to E in a column at the left. Have him write the five completed facts (such as 5-4=1) in a row opposite the proper labels, then study the answers to these facts and cross out the one fact that does not belong in the row. You may need to help him discover the pattern in the first row he works on.

As children become proficient in this activity, and as more basic facts are learned, some child may make additional cards. Multiplication and division basic facts may be included.

Answer cards could be made so children may check to see if they have made the right decisions.

8. Spin It

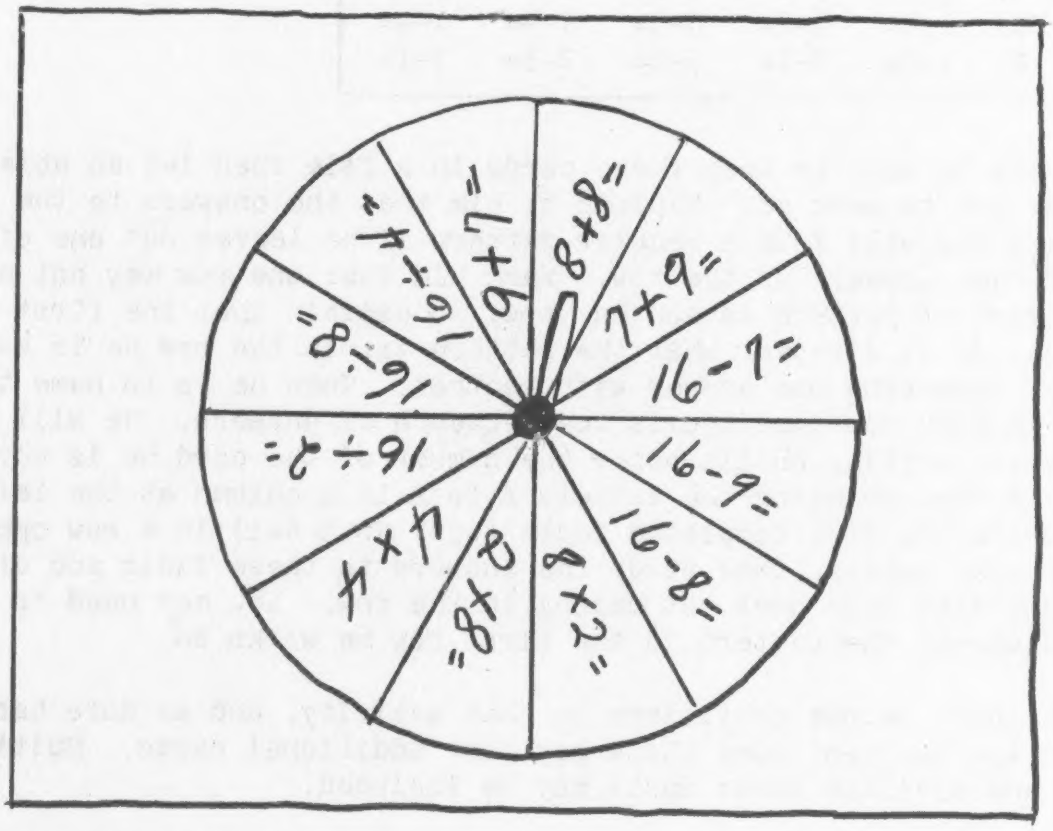
The spinning game is one in which a child or the whole class may participate. The activity as described provides practice on basic facts for the 16 group, but it can be used for other groups and for mixed facts from any group.

Materials for making the game are: Light cardboard (such as oak tag), a paper clip, and a brass brad.

Cut out a 6" cardboard square and draw a circle on it, being careful to leave margin between the rim of the circle and the edge of the card so that a child can hold the card without covering the circle with his fingers. Divide the circle into 12 equal sections. Make strong pencil or crayon lines to delineate each section. Fasten a paper clip to the center of the card by sticking the double flanges of a brass brad through the paper clip and then through the center of the circle. The two ends of the brad are then folded back on the under side of the card. (It is important to fasten the brad loosely, since the clip must be free to spin easily.) Several of the abler students can finish the construction of the game by writing in each of the sections of the circle one of the 12 basic facts:

9+7=
7+9=
8+8=
16-7=
16-9=
16-8=
16÷8=
16÷4=
16÷2=
2x8=
8x2=
4x4=

This game can be played with a class or a child can play it by himself. Other discs can be made for practice with mixed basic facts.


8×8=
7+9=
16−7=
16−9=
16−8=
8×2=
8+8=
4×4
16÷2=
16÷8=
16÷4=
9+7=

WHAT KIND OF A STUDENT ARE YOU?

A Good Student -

	Good (4)	Average (3)	Not So Good (2)
1. Is almost always prepared; gets and keeps all necessary study materials together (pencils, pens, ruler, eraser, paper).			
2. Concentrates; works when he works and plays when he plays.			
3. Has a definite time and place to study.			
4. Studies when he is fresh, not tired.			
5. Is neat, orderly, pleasant, attentive and respectful.			
6. Asks for help when he needs it and gets help wisely. (Uses a clue where or how to find information.)			
7. Has a list of his weak points in each subject and tries to correct them.			
8. Is active in classroom work; asks questions; takes part in discussions and projects.			
9. Follows instructions regarding heading of paper, margins, folding of paper, and such things very carefully.			
10. Makes use of the table of contents, index diagrams, footnotes, and illustrations in a book.			
11. Knows exactly what he is supposed to do for tomorrow.			
12. Hands his work in on time; never goes to class without his work done.			
13. Finishes what he starts before going on to another job.			
14. Does the hardest job first.			
15. Uses his head and thinks about what he reads; takes notes in his own words.			
16. Constantly tries to get more done in less time or the same amount done better in the same time. (Keep a time card for each subject for a week.)			
17. Learns the meaning of new words he meets and keeps a list of them.			
18. Goes over the whole lesson quickly to find out what it is about. (Reads headlines, first and last sentences of paragraphs, summaries, or questions.) Then goes back for details.			
19. Takes a real interest in his studies; talks about them & reads more than he has to.			
20. Studies as soon after the assignment as possible.			
21. Does not interfere with other students by noise or conversation or asking to borrow.			
22. Without being told spends his free time wisely (using library materials; setting up a science experiment; making an arithmetic device, or using arithmetic devices, etc.)			
23. Makes up work he missed as soon as possible without waiting for the teacher to come to him.			
24. Accepts criticism in the right spirit.			
25. Has opinions of his own, but will consider new ones.			

After reading each item carefully, place your score in the right column:

Good, 4; Average, 3; Not So Good, 2.

Add each column and then add the three totals for the grand total. A perfect student has a score of 100; an excellent student has a score of 87; a good student has a score of 75; a poor student has a score of 62; a very poor student has a score of less than 50.

BIBLIOGRAPHY FOR ENRICHMENT

BROWNELL, WILLIAM A. and WEAVER, J. FRED, Teaching Numbers We Need, Ginn and Co. Chicago, 1958, Primer and Books 1 and 2.

BUCKINGHAM, BURDETTE R., Elementary Arithmetic, Its Meaning and Practice, Ginn and Co., Chicago, 1953

CLARK,JOHN R., JUNGE, CHARLOTTE W., and MOSER HAROLD E., Growth in Arithmetic, World Book Co., Yonkers-on-the-Hudson, 1957, Grades 3-5

FREDERICK, ROBERT W., How to Study Handbook, D. Appleton -Century Co.,N.Y. 1938

HARTUNG, MAURICE L., VAN ENGEN, HENRY, and KNOWLES, LOIS, Seeing Through Arithmetic, Scott, Foresman and Co., Chicago, 1958, Grades 3-6

MORTON, ROBERT LEE, Teaching Children Arithmetic, Silver Burdett Co., N.Y. 1953

SPITZER, HERBERT F. and NORMAN, MARTHA, Exploring Arithmetic, Webster Publishing Co., St. Louis, 1958, Grades 1-2

SPITZER, HERBERT F., Practical Classroom Procedures for Enridhing Arithmetic, Webster Publishing Co., St. Louis, 1956

BULLETINS

Denver Public Schools, A Mathematics Program for Gifted Children, Grades 5-6 Department of Education, 1955, pp.1-4

University of Texas Workshop Group, Curriculum Enrichment for Gifted Elementary School Children in Regular Classes, University of Texas, Austin, 1957, pp. 71-95.

BANE, ROBERT C., "How are Your Nines?", The Arithmetic Teacher, Vol. III, No. 2, March 1956, pp. 77-79

BREWER, SHIRLEY STILLINGER, "The Scientific Method of Problem Solving," The Arithmetic Teacher, Vol III, No. 3, April 1956, pp. 117-118

DEVAULT, M. VERE, The Abacus and Multiplication, Vol. III, No. 2, March 1956, p. 65, The Arithmetic Teacher

HERRIOTT, ROBERT E., "An Aid in the Analysis of Verbal Problems," Vol V, No.3 April 1958, pp. 143-145, The Arithmetic Teacher

HERTZ, PAULINE, "Manipulative Devices in Lower Grades," Vol. IV, No. 5, November 1957, pp. 214-216, The Arithmetic Teacher

JANICKI, GEORGE, "Bizz Buzz Game in Arithmetic," Vol III, No. 1, February 1956, p. 28, The Arithmetic Teacher

MACRAE, IRENE R., "A Place-Value Game for First Graders," Vol. IV, No. 5, November 1957

OSBORN, JESSE, "The Hundred Board," Vol III, No. 2, March 1956, pp. 54-55, The Arithmetic Teacher

ROYS, WILLIAM B., "The Fracto-Percenter," Vol. II, No. 5, The Arithmetic Teacher, December 1955, p. 162

ULRICH, LOUIS E., Sr., "Casting Out Nines," Vol. II, No. 3, October 1955, The Arithmetic Teacher, pp. 77-79

WILLERDING, F., "A Cross-Number Puzzle for Primary Grades," and "A Cross-Number Puzzle for Intermediate Grades," Vol. IV, No. 5, The Arithmetic Teacher, pp. 221 and 223

SCIENCE ENRICHMENT

It must be clearly understood by all who use this guide that it is to be used as supplementary over and above the regular established textbook presentation of science in the elementary grades. The only way a person can teach properly in any subject is through a proper organized sequence of processes and activities as presented in a basic series of textbooks.

This guide is intended to give the child who has successfully completed the basic requirements some additional stimulation to learn more about those facts and to expand on them.

The following attitudes and objectives should be kept in mind at all times when pursuing the subject of science, either at a regular or an enrichment level. Science should be approached with the following attitudes clearly in mind:

1. A desire to know more about one's surroundings.

2. A belief that when something happens there is a cause that can be explained.

3. A sincere belief of the falsity of superstition.

4. A knowledge that what is true does not change, but that one's ideas of what is true change as we gain more and more knowledge.

5. A hesitancy to accept as fact anything not supported by proof.

6. A determination to plan carefully not to just experiment or work blindly.

7. A pride in accuracy in all activities and observations.

8. A willingness to consider all relative evidence before coming to a conclusion.

9. A persistence to make many observations and proofs before coming to any final decision, rather than basing a decision on just a few.

10. A desire to do one's observing and experimenting, but a willingness to base that activity on the work of other scientists.

11. A flexible or open-minded attitude that will permit a change of opinion if newer evidence shows that it is wrong.

12. A respect for another person's point of view.

13. A determination to be objective no matter how strong your likes and dislikes.

The teacher of science has a tremendous responsibility in building the foregoing attitudes. He is essentially the guide, leader, consultant and resource person for every child at every learning level. This does not mean that the teacher must have an unlimited knowledge of the subject matter or methods, but that he have the same type of scientific attitude he expects from the children.

Blough suggests a few objectives for teachers to keep in mind:

1. To help children form their own ideas or generalizations that will help them settle their own problems.
2. To help children grow in ability to solve problems effectively.
3. To help children learn by doing, seeing, and feeling rather than strictly by reading, listening, and accepting.
4. To help children form a scientific attitude and use it.
5. To help children develop an appreciation and interest in their surroundings.

This guide has been set up as enrichment project work that an individual may undertake. It is pointed toward individual activity rather than teacher-directed group activity. These activities are arranged to supplement the text-suggested activities at each grade level; however, it should be clear that they are not limited to that level and time. They should be undertaken whenever the interest and desire are intense enough to warrant the effort.

In project work the gifted child must be challenged by problems which require him to think and seek information. He must be given an opportunity to read widely, to work with difficult materials, to exhibit independence, to demonstrate insight and share his findings with the group.

These activities should be approached with the attitude that the child select his own activities and pursue them in his own way. It is hoped that with the readiness established by doing the regular class work, the permissiveness used here may set the proper emotional tone to cause a child to learn much. A proper student-teacher relationship should be maintained, however, so that the teacher may give behind-the-scenes help through questions, suggestions, and securing of materials.

Sun, Moon and Stars

I. Objectives

   A. To introduce the children to an accurate understanding of the movement of the earth, moon, and sun.
   B. To develop an understanding of the effect of the rotation of the earth upon the movement of the stars.
   C. To teach the child to recognize some of the more easily recognized constellations.

II. Concepts to be Developed

   A. Each day the sun seems to rise in the east, moves across the sky, and sets in the west.
   B. The moon and stars also seem to rise and set in the same manner.
   C. For those who live in the northern hemisphere, some stars seem to circle around the North Pole.
   D. The rotation of the earth on its axis causes the sun, moon, and stars to seem to move.
   E. The stars seem to form pictures in the sky.
   F. The earth moves once around the sun in one year.
   G. The moon makes one orbit around the earth once in approximately one month.

Activities	Concepts to be Developed
1. Find your shadow in the morning when you walk to school On which side of you will your shadow be?	1. The shadow is always on the opposite side of a person or object from the source of light.
2. Find your shadow in the afternoon when you go home from school. Has your shadow moved from where it was in the morning when you came to to school?	1. The sun can help us measure time.
3. Push a long stick into the ground in a sunny spot on the playground. Put a stone at the place where the shadow of the stick is when school is over for the day. (10 p. 86) Draw a picture to illustrate your playground sundial.	
4. Make a sun clock. Invert a round carton. Place a stick through the box at an angle. On the face of the carton, write the numbers from 1 to 12 as on a clock. The shadow of the stick should be on the 12 at exactly noon. By noticing where the shadow falls, you can tell the hour.	1. The movement of the sun and shadows helps us to determine time.
5. Look for your shadow at nine o'clock in the morning. Have some one measure it with a yardstick. Find your shadow and have someone measure it at lunch time, and again when school is out for the day. When was the shadow the longest? Why? When was the shadow shortest? Why?	1. Shadows move in relation to the position of the sun.
6. Get some dark paper. Get some little stars made of light paper. Stick them on the dark paper. Make them look like the Big Dipper and the North Star in summer. Turn the dark paper to see how the Big Dipper looks in autumn, spring, and winter. (10) p. 92	1. The North Star always looks as if it were in the same place, but dippers seem to change position during the night and with the seasons. 2. The earth rotates once on its axis every day and this rotation makes the dippers seem to go around the North Star every day.

7. Draw constellations on the bottom of a round cardboard carton. Punch holes for the stars. Insert a lighted flashlight into the open end. The light shining through the holes will make cartons glow. Put a different constellation on each. (114) p. 94	1. Identification of constellations.
8. Find pictures of the different phases of the moon. Display them on a bulletin board. Write an explanation of each.	1. The moon's shape is round as a ball. 2. Since we see only the lighted side of the moon that is turned toward the earth, the moon sometimes appears to have other shapes.
9. Using a lamp and a ball, demonstrate to the class how the moon's light can be seen from the earth.	
10. Read "The Story of the Moon" on page 110 in Science Across the Land. (160) pp. 110-124	
11. Draw a star. Do stars really have five points? See if you can find a story that explains what stars really are.	1. Stars are large masses of burning gas.
12. Read the story on page 236 in Science Far and Near to find out how large stars are. (75) pp. 103-107	
13. Read and tell star legends about constellations. Draw pictures to illustrate the legends.	1. Legends are non-scientific but make interesting reading because they appeal to the imagination.
14. Show that light can be reflected. Hold a mirror so that the sunlight falls on it. Make the light dance about the room. The light from the sun strikes the mirror and is reflected or turned back.	1. The sun shines on the moon and the moon reflects the light back to earth.
15. Show that the moon shines by reflected light. In a darkened room have someone hold up a black ball, representing the moon. The ball can be seen only dimly. Turn the beam of a flashlight on the ball. Now the ball can be seen clearly. One half of the ball is lighted and reflects light from the flashlight.	

16. Read stories which the people of long ago made up to explain the moon's changes in shape. You will find such a story on page 23 of The Earth's Nearest Neighbor.

17. Read the story about the origin of the moon in First Book of the Earth, page 44.

III Evaluation

A. Children should not be expected to memorize long lists of facts about the sun, moon, and stars. However, they should retain some essential information about the sky.
   1. They might give an oral report before their own class or in another classroom. This will serve as a summary of what they have learned.
   2. They might write original stories about travel to the moon or other heavenly body, using scientific facts as a basis for their story.
   3. Making puzzles or riddles about heavenly bodies may aid in fixing essential facts.
   4. Children may enjoy dramatizing a favorite star legend.

SUGGESTED ACTIVITIES FOR ENRICHMENT OF SCIENCE TO ACCOMPANY STUDY GUIDE

I. Plants and Animals

A. Make an aquarium. Discuss animals that live in water and how they are fitted for this kind of living.

B. Collect tadpoles. Note the changes as they develop into frogs.

C. Find some animal tracks. Tell about the animals that made them.

D. Bring to school feathers which you have found. Locate the quill, vane, shaft, barbs, barbules. Use a magnifying glass to examine them. Discuss ways in which feathers help birds. Note that your hands get oily when you handle feathers. Tell why. Find evidence to prove your reason.

E. Make a drawing or chart showing parts of a bird. Tell about the structure of a bird.

F. Make drawings to show the feet of perching birds, swimming birds, wading birds, scratching birds, birds of prey, woodpeckers.

G. Find poems about birds. Tell how you think the poet felt about birds. Make a booklet of bird poems. Make drawings to illustrate.

H. Try to find a nest you can watch. Keep a record of
   1. The nest building activity
   2. The care of the young
   3. The food of the birds
   4. How the young learn to fly
   5. The work of each parent

I. Make a pictorial dated record of the activities of each bird family observed.

J. Examine a collection of bird nests or a collection of pictures of bird nests. Of what material is each made?

K. Interview a local bird watcher regarding his experiences in studying birds. Discuss the best ways to observe birds so that they will come near you.

L. Collect pictures of many birds. Arrange them in four groups:
  1. Birds that eat mostly seeds and fruit.
  2. Birds that eat mostly insects.
  3. Birds that eat mostly fish.
  4. Birds that eat mostly mammals.

II. Machines

A. Talk to a man who is in charge of constructing a building to find out how tools and machines help the men with the work of building. Draw pictures to show how machines are used in construction.

B. Make a list of the tools or machines that are used for a common purpose; such as, building a doll house or changing a tire.

C. Find out and tell the class how tools and machines should be cared for.

D. Make a list of safety rules for using tools at home and school.

E. Bring to school pictures of machines which have wheels or rollers. What kind of work does each machine do? Discuss the amount of labor needed for each job.

F. Make a scooter from pieces of lumber and skate wheels.

III. Weather

A. Make a thermometer. You will need a drinking straw, some clay, and a bottle containing some water colored with red food coloring. Fill the bottle with the red liquid. Push the straw into the bottle and seal the bottle tightly with the clay. Set your thermometer in a pan of warm water. Then set it in a pan of cold water. What happens to the liquid in the bottle? Tell why. (152) pp.42-43

B. Make a chart listing days of the week and having space to write the temperature inside the building and outdoor temperature. Be sure to take the temperature at the same time each day.

C. How many kinds of thermometers can you name? See how many you can bring to school.

IV. Heat and Cold

A. Try to remove a tight lid from a jar that cannot be opened. Stand the jar upside down in a pan containing hot water for a few minutes. Try again to remove the lid. Tell why the lid can now be removed easily.

B. Explain why the rails of a railroad track do not fit together in the wintertime.

C. Explain why telephone wires sag more in summer than in winter.

D. Tell why concrete roads are built in short blocks with tar in between the sections.

V. The Air

A. Secure a Pyrex nursing bottle or Pyrex flask. Fasten a stretched rubber balloon across the bottle top. Heat the bottle. What happens to the balloon? How has the heat changed the air in the bottle?

B. Blow up a balloon. Release the balloon. Tell why the balloon will rise.

C. Hold a pinwheel over a hot radiator or stove. Explain why the pinwheel will go around.

D. Find pictures which show the helpful work of the wind, and the damage done by the wind. Make a list of ways in which man uses wind to do his work.

Evaluation

Evaluation is an important aspect of the science program. Tests on recall of subject matter are common, but we need to give increased attention to measuring growth

in ability to use scientific method of problem solving,
in the use of scientific attitude,
in appreciation of and interest in the natural environment.

Children, even in the first grade, are able to do a few activities and experiments independently; however, a dislike for being tested on their achievement may inhibit their interest in attempting such experiments. Very often teachers can fairly accurately check on learning by visiting with the child and through informal class discussions.

The children may wish to plan a culminating activity to show the results of their work to their parents or at a school assembly. The children, to a large extent, should decide upon the activity and make the necessary preparations for themselves. The teacher should be ready to assist as guide, leader, consultant, and adviser. The children might plan a series of easy experiments, perform and explain them; plan and draw a series of large pictures that show the importance of the ideas they have learned; or write stories that illustrate the generalizations they have discovered.

Children might evaluate their learning by asking themselves such questions as these:

1. What things did we do best?
2. How could we have improved our way of working?
3. What did we do to be sure that our experiments told us true things?

A point for teachers to remember: Decide what it is you hope to accomplish in teaching science, keep it in mind, keep checking to see that you are on the right track, and keep evaluating to find out how close you are coming to your goal.

Let these purposes be those of the pupils and let them help with the plans for accomplishing these objectives.

The results of evaluation are helpful in that:

1. They assist the teacher to understand each child and his problems.
2. They help the teacher plan additional learning experiences.
3. They enable a child to measure his own progress and result in a greater desire for further learning.

The Science Activity Center

A science activity center in the classroom is a stimulating and worthwhile undertaking. It should be colorful and inviting; a place where children can do something about science. It should include three general areas: a work surface, a book shelf, and display facilities.

The work surface is a table, or perhaps several orange crates together. There might be materials at hand for repeating a recent experiment, a science wonder box, or materials for making a chart, diorama, or models. The character of the work surface will change often.

The book shelf will have not only books about the subject being studied at the time, but also items to arouse curiosity and to promote new interests.

The display facilities should provide space for properly displaying such items as a caterpillar or cocoon, sea shells, a collection of pretty rocks, or a model. It must also provide vertical space for displaying charts, pictures, etc. Teaser tags with provocative questions may be attached to appropriate objects. "Which of these are enemies of another?" (Starfish eat oysters),and "How many wheels can you find in this room?", are examples to spark the interest.

The science activity center should be a place where children can feel free to go for any of these purposes after completion of their regular classwork:

1. To perform a new experiment.
2. To repeat an experiment.
3. To perform an experiment that someone else had demonstrated.
4. To observe the results of an experiment.
5. To examine and read science material.
6. To study charts and material on the bulletin board.
7. To add new material to the collections, exhibits, or bulletin board.

Should the science corner be a gem of art, well-balanced, and a thing of beauty, or should it be a genuine product of dirty little hands and inquisitive minds? One clever teacher divided her bulletin board space into three sections: The Gloating Board for formal culminating types of display; the Gleaming Board, whose purpose was to keep fresh in the minds of the children old science learnings out of past experiences; the third, the Glumble (or Jumble) Board, for odds and ends, unrelated but of great interest to the class.

If materials are changed frequently and the orderliness, attractiveness and informality do not overshadow its usefulness, the science center will give every child the opportunity of contributing and participating in class interests and activities.

SCIENCE VOCABULARY

Science words begin to have meaning only when they are used in connection with experiences, experiments, and activities that are interesting and real to the children. Vocabularies grow out of experiments and experiences. From the activities planned in these units of study, these and other words are important and indicate growth.

First Grade

air
animal
autumn
baby
blow
boil
clothes
cloud
cocoon
collection

day
earth
earthworm
experiment
feather
garden
ground
grow
home
light

magnet
moon
morning
mountain
night
noon
pinwheel
plant
question
rain

rock
rough
sand
seashore
seed
shadow
snow
soil
spring
star

summer
sunshine
tame
things
water
weather
wheel
wild
wind
winter
work
young

Second Grade

ants
aquarium
balance
bubble
burning
caterpillar
cell, dry
changes
color
direction

electric
electricity
engine
evaporate
flower
fruit
grass
height
ice
insect

leaves
lever
machine
magnifying glass
mechanical toy
moth
motor
observation

prism
pulley
rainbow
ray of light
roots
scales
seasons
siphon
stalk
steam

storm
switch
temperature
thermometer
trips
ventilation
weed
weight
year

Third Grade

apparatus
backbone
belief
blood
body
brake
compass

contract
copper
difference
division
expand
fern
fog

friction
hard
invention
liquid
mammal
microscope
minute

pressure cooker
proof
raw
reflection
refrigerator
reproduce

reptile
spore
superstition
telescope
television
tuber
vapor

SCIENCE MATERIALS

1. Tools
2. Heat source
3. Magnets
4. Magnifying glass
5. Room thermometer
6. Dry cells
7. Copper wire
8. Bottles
9. Glass plates
10. Jars, assorted
11. Electric bell
12. Compass
13. Candles
14. Flashlight
15. Stopper, cork
16. Pans and trays
17. Dishes
18. Glass tubing
19. Iron filings
20. Rubber tubing
21. Test tubes
22. Glass tumblers
23. Balloons
24. Electric switches
25. Funnels
26. Rubber stoppers
27. Tin cans
28. Flower pots
29. Seeds, bean, pea
30. Terraria, aquaria
31. Iodine
32. Alcohol, denatured
33. Salt, table
34. Baking Soda
35. Lime, slaked
36. Sugar
37. Vinegar
38. Paraffin, sealing wax
39. Cloth, silk, wool
40. Needles, assorted
41. Prism, triangular
42. Wire, iron
43. Balance, spring
44. Balls, large, small
45. Boxes, assorted
46. Cardboard
47. Cord or twine
48. Flask, Pyrex
49. Globe, world
50. Lamp chimneys
51. Safety mat
52. Flash bulbs
53. Electric sockets
54. Microscope and slides
55. Mirrors
56. Metal, copper sheet
57. Paring knife
58. Barometer
59. Bolts
60. Clay, modeling
61. Teakettle
62. Electric lamp cord
63. Pulleys
64. Machines, toys
65. Lumber
66. Iron stands, clamps
67. Electric motor
68. Metal cup
69. Carpet tacks
70. Screws
71. Rubber rod or comb
72. Bicycle pump
73. Litmus paper
74. Beakers
75. Cellophane
76. Clinical thermometer
77. Starch
78. Animals in school
79. Animal cages
80. Potted plants
81. Bulbs, flower
82. Ant house
83. Household ammonia
84. Rock collection
85. Tuning fork

FILMS AND FILM STRIPS

Plants and Animals

See pages 58-63 (Science-Nature Study) in Catalog of Audio-Visual Instructional Materials, Cheyenne Public Schools, September 1961

The Earth

FS - J35	How Things in the World Change (primary, intermediate, jr. high)
FS - J40	Things in the World Change (primary, intermediate)
MP - 40	Earth, Its Rotation and Revolution (primary, intermediate)

Adjusting to Environment - Inventions

FS - H2	Story of Thomas A. Edison (primary, intermediate)

Air Travel

FS - P46	Seeing the Airport (primary, intermediate)

Energy

FS - E18	Magnets (primary, intermediate)
MP - 23	Michall Discovers the Magnet (primary, intermediate)

Chemical and Physical Changes

FS - J35	How Things in the World Change (primary, intermediate, jr. High)
FS - J40	Things in the World Change (primary, intermediate)

The Heavens

FS - K38	Night amd Day (primary, intermediate, junior high)

Weather

FS - A11	Air
MP - 1	Air Around Us
FS - J37	We Learn About Weather
FS - J38	Changes in Weather

Film Sources:

Cheyenne School Audio-Visual Office
Union Pacific Railroad
United Air Lines
State Health Department
State Game & Fish Department
Liggett & Myers Tobacco Company
Wyoming Travel Commission
Cheyenne Chamber of Commerce
Carnegie Public Library

CHILDREN'S BIBLIOGRAPHY

1. A Source Book of Science Experiments for Elementary School Children, Volume 2, Part I, Weather and Climate, The Story of the Earth, Division of Curriculum, Louisville Public Schools, Louisville 8, Kentucky, 1957
2. BAKER, ARTHUR O., Around the Corner, Rand McNally & Co., Chicago, 1955
3. BEACHAMP, WILBUR L., etal, Guide Book for Look and Learn, Scott, Foresman & Co., Chicago, 1950
4. BEELAND, LEE and WELLS, ROBERT, Space Satellite, The Story of the Man-Made Moon, Prentice Hall: Englewood Cliffs, N.J. 1957. (Full scale account of Project Vanguard written for easy reading. Many clear drawings and diagrams).
5. BENDICK, JEANNE, The First Book of Space Travel, Franklin Watts, New York, 1953
6. BENDICK, JEANNE, What Could You See, Whittlesey House (McGraw-Hill Book Co.), New York, 1957. (A good book to arouse interest in the world about us; tells what you see if you are under the sea, etc.)
7. BERGAUST, ERIK, Rockets and Missiles, G.P. Putnam's Sons, New York, 1957
8. BLACK, CHARLES L., The Big Book of Real Airplanes, Grossett & Dunlap: New York, 1951
9. BLOUGH, GLENN O., The Tree on the Road to Twintown, Whittlesey House, (McGraw-Hill Book Co.), 1953. (A story about a tree, how it grows, etc.)
10. BOND, AUSTIN D., et al, Thinking About Science, Lyons & Carnahan, Chicago, 1958
11. BROEKEL, RAY,You and the Sciences of Mankind, Children's Press (This tells simply what the different scientists in specialized fields of Anthropology, Archeology, etc. have to do; well illustrated, interesting reading)
12. CANDY, ROBERT, Nature Notebook, Houghton Mifflin Co., Boston, 1953. P. 114 (This is a wonderful book for nature lovers, hunters, trappers, and fishermen. It shows you how to recognize nature's best, how to care for it, how to collect specimens, etc.)
13. COGGINS, JACK, By Space Ship to the Moon, Random House, New York, 1952
14. DEL REY, LESTER, Rockets Through Space, John C. Winston Co., Philadelphia, 1957. (Tells about the rockets and space ships, survival in space, space suits, space stations - the moon, planets, atomic power.)
15. FABELL, Walter C., Nature Was First, David McKay Co., New York, 1952. (This little book gives some cute illustrations in interesting story form where nature was first with a shower bath, cleaning teeth, etc.)
16. FISHER, JAMES, The Wonderful World of the Sea, Garden City Books, Garden City, New York, 1957. P. 68 (A well illustrated book showing all about the sea, its animals, history, and man's relation to it.)

17. FISHER, JAMES, The Wonderful World, Hanover House: Garden City, New York, 1954, P. 66. (A good book of pictures and drawings from the forming of the earth to life on all parts of it.)

18. BRANLEY, FRANKLIN M., Exploring by Satellite, The Story of Project Vanguard. Thomas Y. Cromwell Co., New York, 1957

19. FREEMAN, MAE and IRA, Fun With Astronomy, Random House: New York, 1953, p. 57

20. FROST, FRANCES, Rocket Away, Whittlesey House, McGraw-Hill Book Co., Inc., New York, 1953

21. GALLANT, ROY A., Exploring the Weather, Garden City Books: Garden City, New York, 1957, P. 62. (Nice drawings, interesting reading. This book tells all about weather.)

22. GALLANT, ROY A., Exploring the Planets, Garden City Books: Garden City, New York, 1958, P. 121. (A good well illustrated story of the heavens.)

23. GREEN, IVAH, Partners with Nature, International Textbook Co.: Scranton, 1950, P. 109. (A good book on nature study, very interesting reading.)

24. HARRISON, GEORGE RUSSELL, How Things Work, Willian Morrow & Co., New York, 1941, (Covers all phases of science in easy to read form; good drawings.)

25. HOGBEU, LANCELLOT, The Wonderful World of Energy, Garden City Books: Garden City, New York, 1957, P. 69. (This is a wonderful book showing energy from muscle power to atomic energy. Some important experiments and discoveries are illustrated.)

26. HUMPHREYS, DENA, The Big Book of Animals Every Child Should Know, Grossett & Dunlap, Inc., New York, 1957

27. HURST, EARL OLIVER, The Big Book of Space, Grossett & Dunlap, New York, 1953. (About fourth grade level - contains information of space ships, space stations, rockets, equipment, star maps.)

28. HYDE, M. O., Flight Today and Tomorrow, Whittlesey House, McGraw-Hill Book Co., New York, 1953. (Explains flight as we know it and space travel as scientists expect it to be. Discusses jet planes, helicopters, gliders, transports, rockets. Many black and white drawings.)

29. LARRICK, NANCY, See For Yourself, Aladdin Books: New York, 1952, P. 47 (Lots of good simple experiments today.)

30. LEAF, MUNRO, Science Can Be Fun, J. B. Lippincott Co., Philadelphia, 1958, P. 48. (This is an excellent book for children who want to experiment. The experiments are drawn in cartoon form, the reading print is large and well accentuated.)

31. LEWELLEN, JOHN, The True Book of Airports and Airplanes, Children's Press, Chicago, 1956. (Contains information about airliners, smaller planes, Air Force and Navy planes, experimental planes, helicopters, and planes of the future. Contains many pictures and drawings.)

32. LEWELLEN, JOHN, You and Space Travel, Children's Press, Inc., Chicago, 1951

33. LEY, WILLY, Space Pilots, Guild Press, Inc., Poughkeepsie, N. Y., 1957

34. LEY, WILLY, Man-Made Satellites, Guild Press, Inc., Poughkeepsie, N.Y.,, 1956

35. LEY, WILLY, Space Stations, 1958, Guild Press, Inc., Poughkeepsie, N. Y., 1956

36. MASON, GEORGE F., Animal Tools, William Morrow and Company, Inc., New York, 1957

37. MASON, GEORGE F., Animal Weapons, William Morrow and Company, Inc., New York, 1949

38. MAY, JULIAN, There's Adventure in Electronics, Popular Mechanics Press: Chicago, 1957, p. 169. (An interesting way of learning about electronics in adventure story form. Covers television, etc.)

39. MEYER, JEROME S., Picture Book of Chemistry, Lothrop Lee & Shepard: New York, 1950, p. 40. (A lot of good simple chemistry experiments with easy to get materials.)

40. NEVILLE, LESLIE E., The Aviation Dictionary for Boys and Girls, Whittlesey House, McGraw-Hill Book Co., New York, 1944

41. NEWELL, H. E., Space Book for Young People, Whittlesey House, McGraw-Hill Book Co., Inc., New York, 1958. (Contains an explanation of earth and its position in the universe. Up-to-date facts about space, space travel, rockets, satellites. Black and white illustrations.)

42. PARKER, BERTHA MORRIS, The Golden Treasury of Natural History, Simon and Schuster: New York, 1952, p. 216. (A very good source book with colored pictures and photographs of nature and the heavens.)

43. PARKER, BERTHA, The Golden Book of Science, Simon and Schuster: New York, 1956. (This is a large book covering almost everything, well illustrated.)

44. POGENDORF, ILLA, The Tree Book of More Science Experiments, Children's Press, 1956, p. 47. (Good experiments on Light, work, inertia, ice, water and water vapor.)

45. PRATT, FLETCHER, All About Rockets and Jets, Random House, New York, 1955. (Good experiments.)

46. REED, W. MAXWELL, The Sky is Blue, Harcourt, Brace & Co.,: New York, 1940, p. 151 (Good reading about our earth and the science in and around it.)

47. SCHNEIDER, HERMAN and NINA, Science for Work and Play, D. C. Heath and Company, Chicago, 1955

48. SCHNEIDER, HERMAN, NINA, Follow the Sunset, Doubleday & Co., Garden City, New York, 1952, p. 43. (This story follows the sunset around the earth. It has songs for the end of the day each place.)

49. SCHNEIDER, LEO and MAURICE U. AMES, Wings in Your Future, Harcourt, Brace & Co., New York, 1955. (Four grade level; contains information on principles of flight, jet propulsion, jet engines, special kinds of aircraft, such as helicopters, convertiplanes, and gliders and metropolitan airports. One section on flight in the future.)

50. SCHWARTS, JULIUS, It's Fun to Know Why, Whittlesey House, McGraw-Hill Book Co., New York, 1952, p. 125. (Experiments and questions to help you find out about everything from bread to woolens.)

51. SHENTON, EDWARD, The New Alphabet of Aviation, Macrae-Smith Company, Philadelphia, 1941, (Clear, concise, practical. Valuable as a reference and supplement to aviation dictionary. Fundamentals of flying explained for easy understanding.)

52. SMITH, VICTOR and CLARK,KATHERINE, Science Around the Clock, J. B. Lippincott, Chicago, 1956

53. THURBER, WALTER A., Exploring Science, Allyn & Bacon Inc., Chicago, 1955

54. TOWNSEND, HERBERT, Our Wonderful Earth, Allyn & Bacon, Boston, 1950

55. WATSON, JANE WERNER, My First Book About God, Simon and Schuster: New York, 1957, (Shows relationship of nature and God.)

56. WEBB, ADDISON, Song of the Seasons, William Morrow and Co., Inc., New York, 1950

57. WILLIAMS, HENRY L., Stories in Rocks, Henry Holt and Co.,Inc., New York, 1948

58. WYLER, ROSE, The Golden Picture Book of Science, Simon and Schuster, New York, 1957, p. 57. (A good picture book and experiments about animals, rocks, plants, gravity, day and night, rain and snow, sky and the ocean. Lots of science fun.)

59. ZIM, HERBERT S., Comets, William Morrow and Company: New York, 1957, p. 64. (All about comets with lots of good drawings.)

60. ZIM, HERBERT S., What's Inside the Earth?, William Morrow and Company, New York, 1953

SUPPLEMENTARY

(Textbooks available at the Professional Library; listed by publisher)

Allyn and Bacon (Walter A. Thurber)

61. Exploring Science One
62. Exploring Science Two
63. Exploring Science Three
64. Exploring Science Four
65. Exploring Science Five
66. Exploring Science Six

Ginn and Company (Craig, and others)

67. Science and You, Primer
68. Science Near You, Grade One
69. Science Around You, Grade Two
70. Science Everywhere, Grade Three
71. Discovering with Science, Grade Four
72. Adventuring in Science, Grade Five
73. Experimenting in Science, Grade Six

Heath and Company (Schneider and Schneider)

74. Science for Work and Play (Grade One)
75. Science Here and Now (Grade Two)
76. Science Far and Near (Grade Three)
77. Science in Your Life (Grade Four)
78. Science in Our World (Grade Five)
79. Science for Today and Tomorrow (Grade Six)

J. B. Lippincott Company (Smith, Clark, Henderson, Jones)

80. Along the Way, Book One
81. Under the Sun, Book Two
82. Around the Clock, Book Three
83. Across the Land, Book Four
84. Through the Seasons, Book Five
85. Beneath the Skies, Book Six

Macmillan Company (Barnard, Stendler, Spock, and others)
The Macmillan Science Life Series, 1959

86. Book One Science Life Series
87. Book Two "
88. Book Three "
89. Book Four "
90. Book Five "
91. Book Six "

Rand McNally Company

92. Junior Scientist Series (Baker, Maddux, Warrin)
93. Down Your Street (Grade One)
94. Around the Corner (Grade Two)
95. In Your Neighborhood (Grade Three)
96. Now and Away (Grade Four)
97. Far and Wide (Grade Five)
98. Your Science World (Grade Six)

The L. W. Singer Company (Frasier, MacCracker, Decker, and others)

99. We Wonder, Pre-primer
100. We Ask, Primer
101. We Look and Listen, Grade One
102. Seeing New Things, Grade Two
103. Finding Answers, Grade Three
104. Exploring Together, Grade Four
105. Doing Experiments, Grade Five
106. Solving Problems, Grade Six

John C. Winston Company - Understanding Science Series
(Dowling, Freeman, Lacy, Tippett)

107. I Wonder Why, Grade One
108. Seeing Why, Grade Two
109. Learning Why, Grade Three
110. Explaining Why, Grade Four
111. Discovering Why, Grade Five
112. Understanding Why, Grade Six

GENERAL BIBLIOGRAPHY

113. Association for Childhood Education, This is Science, Bulletin, Washington, D. C., 1945, p. 43

114. American Association of School Administrators, Conservation Education American Schools, Twenty-ninth Yearbook, AASA: Washington, D.C., 1951, p. 527

115. BLOUGH, GLENN O., CAMPBELL, MARJORIE H., Making and Using Classroom Science Materials in the Elementary School, Dryden Press, New York, 1954

116. BLOUGH, GLENN O. and PARKER, BERTHA MORRIS, Water Appears and Disappears, Row, Peterson & Co., Evanston, Illinois, 1949

117. BLOUGH, GLENN O., SCHWARTZ, JULIUS and HUGGETT, ALBERT J., Elementary School Science and How to Teach It, Dryden Press, New York, 1958

118. CEDARS, MARY E., "Building Backgrounds for Improving Reading in Elementary Science", School Science and Mathematics, May 1958, p. 385

119. CORMACK, M. B., The First Book of Stones, Franklin Watts, Inc., New York, 1950

120. CRAY, G. S., Science for the Elementary School Teacher, Ginn and Co., Boston, 1958

121. Denver Public Schools, The Age of Wings, An Instructional Unit, Denver, Colorado, 1944, p. 40

122. Denver Public Schools, We'll Take the High Road, Air Age Unit, Denver, Colorado, 1945, p. 52

123. DREW, ROBERT E., HUNGERFORD, HAROLD R., BERNHARD, CAROLYN, "Purposeful Science Activity in the Elementary School", School Science and Mathematics, March 1958

124. DUBINS, IRA M., "Some Trends and Problems in Teaching Science in the Elementary School", School Science and Mathematics, January 1957, p. 21

125. FENTON, CARROLL LANE and FENTON, MILDRED ADAMS, The Land We Live On, Doubleday and Co., Inc., New York, 1944

126. FENTON, CARROLL LANE and FENTON, MILDRED ADAMS, Worlds in the Sky, John Day Co., New York, 1950

127. FILSON, MALCOLM H.,"Utilizing the Exceptional Student in Space Age Science", School Science and Mathematics, April 1959

128. FISH, ALPHORETTA, "Using Magnets in the Elementary Grades to Teach Science Understandings", School Science and Mathematics, November, 1957, p. 639

129. FISH, ALPHORETTA, "Begin a Study of Classification in the Elementary Grades", School Science and Mathematics, January 1958, p.53

130. FREEMAN, MAE and IRA, Fun With Astronomy, Random House, New York, 1953

131. FREEMAN, MAE and IRA, Fun With Chemistry, Random House, New York, 1944

132. FREEMAN, KENNETH,et al, Helping Children Understand Science, John Winston Company, Chicago, 1954

133. GAMOW, G., Mr. Thompkins Explores the Atom, University Press, 1955

134. GOODWIN, HAL, The Real Book About Stars, Garden City Publishing Co., Inc., Garden City, New York, 1951

135. GREEN, ESTILL I., "The Riddle of the Ice Ages", School Science and Mathematics, March 1957

136. GREENLEE, JULIAN, Teaching Science to Children, William C. Brown Company, Boston, 1952

137. GRONDAL, FLORENCE ARMSTRONG, Stars, Their Facts and Legends, Garden City Publishing Co., Inc.,New York, 1940

138. GUSTAFSON, AXEL F.et al, Conservation in the United States, Comstock Publishing Associates, Inc., Cornell University Press, New York, 1944

139. HARRISON, HAL H., Outdoor Adventures, Vanguard Press, Chicago, 1951

140. HEISS, ELWOOD D., OSBORN, ELLSWORTH S., and HUFFMAN, CHARLES W., Modern Science Teaching, The Macmillan Co., New York, 1950, pp. 1-112

141. HERBERT, DON, Mr. Wizard's Science Secrets, Popular Mechanics Press, Chicago, 1953

142. HUBLER, CLARK, Working With Children in Science, Houghton Mifflin Company, Boston, 1957

143. LYNDE, CARLETON JOHN, Science Experiences With Inexpensive Equipment, D. Van Nostrand, Princeton, New Jersey, 1950

144. LANE, FERDINAND C., All About the Sea, Random House, New York, 1953

145. LYNDE, CARLETON JOHN, Science Experiences with Ten-Cent Store Equipment, D. Van Nostrand, Princeton, New Jersey, 1950

146. LYNDE, CARLETON JOHN, Science Experiences With Home Equipment, D. Van Nostrand, Princeton, New Jersey, 1949

147. MARK, STEVEN J., "What Schools Can Do Immediately Under Present Conditions to Help Meet the Problems in Science Teaching", School Science and Mathematics, October 1958, p. 558

148. MEHRENS, H. E., Education Aviation and the Space Age, Civil Air Patrol, Bolling Air Force Base, Washington 25, D. C., 1959, p.88

149. MONROE, WALTER S., Encyclopedia of Educational Research, The Macmillan Company , New York, 1950, pp. 1133-1144

150. NELSON, HANS, "Propagating Plants in the Classroom", School Science and Mathematics, April 1957, p. 293

151. Oregon State Department of Education, Teaching Oregon's Children, Salem, Oregon, 1957, p. 214. (pp. 119-127 give a good guide for caring for living things in the classroom.)

152. PARKER, BERTHA MORRIS, Plants Round the Year, Row, Peterson and Co., Evanston, Illinois, 1943

153. PARKER BERTHA MORRIS, Science Experiences, Elementary School, Row, Peterson, Evanston, Illinois, 1952, p. 272

154. Pennsylvania Writers' Project, Looking at the Moon, Albert Whitman Publishing Company Chicago, 1939

155. PICKERING, J. S., The Stars Are Young, Macmillan Co., New York, 1948

156. POUGH, FREDERICK H., All About Volcanoes and Earthquakes, Random House, Inc., New York, 1953

157. PRATT, FLETCHER, All About Rockets and Jets, Random House, Inc., 1955

158. RIEDMAN, SARAH R., Water for People, Henry Schuman, Inc., New York, 1952

159. SHEPARD, PAUL, JR., "The Place of Nature in Man's World", School Science and Mathematics, May 1958, p. 394

160. SOMERVILLE, JOHN, The Way of Science, Its Growth and Method, Henry Schuman: New York, 1953, p. 172. (Teacher reference, just a good book to read for a science background.)

161. SMITH, VICTOR and HENDERSON, BARBARA, Science Across the Land, J. B. Lippincott, Chicago, 1956

162. SPILHAUS, ATHERLSTON F., Weathercraft, Viking Press, New York, 1951

163. STERNIG, JOHN, "Planning a Flight Into Space Science for Today's Children", The National Elementary Principal, Thirty-second Yearbook, NEA

164. The National Elementary Principal, Science for Today's Children, Thirty-second Yearbook, Department of Elementary School Principals, NEA, 1953, p. 311

165. University of Texas, "Enrichment Opportunities in Science-Social Studies", Curriculum Enrichment for Gifted Elementary School Children in Regular Classes, Bureau of Library Schools Publication No. 6, The University of Texas, Austin, 1957, pp. 48-70

166. VICTOR, EDWARD, "What Kind and Amount of Help Do Our Beginning Science Teachers Need?", School Science and Mathematics, October 1958

167. WASHBURNE, CARLETON and HELUIZ, The Story of Earth and Sky, D. Appleton-Century Company, New York, 1935

168. WEICHERT, WILLIAM, "Studying Jets and Rockets," Science for Today's Children, The National Elementary Principal, Thirty-second Yearbook, NEA

169. WOOLEVER, JOHN D., "Fire as a Subject in Elementary and General Science", School Science and Mathematics, February 1957, p. 139

170. YOUNG, DORIS, "Atomic Energy Concepts of Children in Third to Sixth Grades", School Science and Mathemeatics, October 1958, p. 535

171. ZIM, HERBERT S., Lightning and Thunder, William Morrow and Company Inc., New York, 1952

172. A Source Book of Science Experiments for Elementary School Children, Volume 2 Part I, Weather and Climate, The Story of the Earth, Division of Curriculum, Louisville Public Schools, Louisville, Kentucky, 1957

OCT 23 1970

CHEYENNE PUBLIC SCHOOLS
CHEYENNE, WYOMING

SUPPLEMENT TO GUIDEBOOK

THIRD GRADE

SP007165

Revised 1968

ENGLISH
GRADE THREE

Following the use of the book in several pilot studies in third grade, the Roberts English Series is being used system-wide for the first time.

In-service training will be provided to help teachers plan and present the material to their individual classes. The program is experimental and teachers should be reassured by the fact that the book is organized for a systematic progression from unit to unit. The publishers suggest, in fact, that "One may go back for reteaching of parts that have not been well enough learned but one should not go forward skipping intermediate steps".

A workbook is provided for each pupil. These workbooks contain extensive further practice and review of the sound and spelling program and the grammar program. They also contain a complete testing program for the year.

SOCIAL STUDIES

GRADE THREE

Over-all objective of the new social studies is to give children a broad understanding of human society for effective citizenship in a changing world. The program is an inter-disciplinary one with concepts drawn from history, geography, economics, political science, sociology, and anthropology.

In view of the modern trends in the field, this will be a year of experimentation and study of curriculum in the area of elementary social studies in the Cheyenne Public Schools. New textbooks from various publishers will be used in pilot studies.

Those teachers not using experimental books will continue to use the old text and units of study.

Note: The social studies unit, "Where We Get Clothing", should be coordinated with the science unit, "Applied Science". This combined unit should be taught in one block of time in the daily schedule. The social studies unit on "People Who Make Our Homes" would then be postponed until mid-January.

SCIENCE AND HEALTH

GRADE THREE

Objectives:

To provide a framework of concepts, built up through experiences, on which to build future learnings.

To develop a balanced selection of concepts from each area of science in a spiral progression throughout the grades.

To gear the science program to the physical, mental, and emotional needs of children.

To relate the science program to the total school program, particularly the curriculum areas of social studies, health, and mathematics.

To provide the scientific literacy and rational attitudes that are essential for responsible citizenship in this scientific age.

Experiments:

Motivation for each of the experiments found in the text arises from the problem in which the children are currently interested. "Let's see how we can do it" or "We can find out" is often the motivating statement. The ideas gained through the activities can be applied to the children's everyday living.

Each time a new unit is to be introduced, the teacher should list all the necessary equipment and materials for experiments on the chalkboard. Together with the children, the teacher should plan how to obtain things that are not included in the Lab Stacks.

Most of the activities are simple, safe, short, and require only common materials, easily obtained. Don't hesitate to assign such activities to committees and interest groups, to prepare and demonstrate to the class, under your guidance.

Basic Text:

Schneider, Herman and Nina, *Science Far and Near*, D.C. Heath and Company, Boston, 1968.

UNITS OF STUDY

Unit I: Sound and Hearing (2 weeks)

Test: Pages 1-19
Guide: Pages 328-339

Concepts and Percepts:

1. Sounds are produced by vibrations which can travel through solids, liquids, and gases.
2. There are many different sounds.
3. Sound travels through air one mile in five seconds.
4. Sounds in the ear are conducted by messages to the brain.

Vocabulary for the Unit:

vibration
conductor
middle ear
windpipe
lungs
hearing aid
jet

larynx
outer ear
inner ear
inhale
electricity
dolphin
pluck

conduct
eardrum
stethoscope
exhale
brain
pitch
earphone

Material and Equipment Needed for Experiments:

drum
*thread
grains of puffed cereal
ukulele
sheets of paper
watch
*handkerchief
drumstick
large metal pail
*plastic ruler
wooder ruler

*piece of cotton
*sponge
*large nail
*tin can
*rubber balloon
rubber bands
stethoscope
several paper cups
several toothpicks
*ball of thin string

*Included in Lab Stack equipment

Achievement Test: Chapter 1, pp. 1-4 in Test Booklet

Books for Children: See Guide, p. 337

Books for Teachers: See Guide, p. 338

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Filmstrips:

How Your Ears Work	FS-L50
Your Heart and Lungs	FS-L55

Motion Picture:

Sound for Beginners	MP 214

Kit:

Eye, Ear, and Heart Model	Kit 68

Transparencies:

Hearing and Sound (Ear)	TR 301
Lungs, Larynx, Heart	TR 302

Unit II: Life in the Desert (2 weeks)

Text: Pages 20-33
Guide: Pages 340-347

Concepts and Percepts:

1. Most desert plants and animals have special adaptations for living in a desert environment.
2. Most reptiles hatch from eggs.
3. The skin of most reptiles is made of thick scales.
4. Mammals are warm-blooded, suckle their young, have hair or fur. Most mammals are born alive.

Vocabulary for the Unit:

desert
hatch
cold-blooded
spines
reptile
scales
tunnel
cactus
mammal
warm-blooded
waxy
evaporate

Material and Equipment Needed for Experiments:

sand or sandpaper
flowerpot
soil
*rulers
*thermometers
*2 handkerchiefs
wax paper
paper
water
*clothespin
clothes hanger

*Included in Lab Stack equipment

Achievement Test: Chapter 2, pp. 5-8

Books for Children: See Guide, pp. 345-346

Books for Teachers: See Guide, pp. 346-347

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Filmstrips:

The Great American Desert	FS-K8
Survival in the Desert	FS-K9
Mammals of the Desert	FS-K11
Reptiles of the Desert	FS-K12
Small Creatures of the Desert	FS-K13
Plant Life of the Desert	FS-K14

Kit:

Life in the Desert	**Kit 21E**

Picture Set:

Deserts of the World	**PS-44**

Transparencies:

Desert and Water Animals	**TR 303**
Mammals and Reptiles of the Desert	**TR 304**
Desert Plants and Water Plants	**TR 305**

Unit III: A Pond Community (4 weeks)

Text: Pages 34-65
Guide: Pages 348-361

Concepts and Percepts:

1. Aquatic plants and animals are adapted to life in a watery environment.

2. All plants and animals need food and oxygen to survive; they depend on one another for survival.

3. Protective coloration helps many animals to survive.

4. Animals take in oxygen and give off carbon dioxide; green plants use carbon dioxide in making food and give off oxygen.

5. Dead plants and animals return materials to the soil.

6. An aquarium is a small community of plants and animals.

Vocabulary for the Unit:

pond
community
oily
wriggler
carbon dioxide
soil
mold
aquarium
guppy
cycle
amphibian
protective coloration
dragonfly
pupa
gills
fungi
bacteria
gas
algae
fin
insect
bill
mosquito
oxygen
beaver
spores
rot
snail
tadpole
food chain

Material and Equipment Needed for Experiments:

white paper
dark paper
pieces of newspaper
oil
*2 sticks or rulers
*2 dishes
*drinking glasses
water
bread
wax paper
*magnifying glass
aquarium tank
clean sand
aquatic plants
black snails
fish (guppies)
fish food
aquarium thermometer

*Included in Lab Stack equipment

Achievement Test: Chapter 3, pp. 9-12

Books for Children: See Guide, pp. 359-360

Books for Teachers: See Guide, pp. 360-361

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Filmstrips:

How to Make an Aquarium	FS-P13
Keeping an Aquarium	FS-D30
Life in Ponds, Lakes and Streams	FS-D51
What is Soil?	FS-G37
Animal Adaptations	FS-A22
Fresh Water Shellfish and Amphibians	FS-C16
Fresh Water Turtles and Fish	FS-C17
Small Fresh Water Animals and Insects	FS-G36
Waterway Birds	FS-I-3
Shellfish of the Seashore	FS-G26
Birds of Sea and Shore	FS-S20

Motion Pictures:

Let's Watch Plants Grow	MP 211
Animal Communities and Groups	MP 230
Partnerships Among Plants and Animals	MP 235
Mammals are Interesting	MP 21

Kits:

Camouflage in Nature	Kit 211

Transparencies:

Desert and Water Animals	TR 303
Desert Plants and Water Plants	TR 305
Protective Coloration	TR 306
Decay of a Log (Soil Building)	TR 307

Unit IV. The Big Ocean (3 weeks)

Text: Pages 66-95
Guide: Pages 362-371 and 484-488

Concepts and Percepts:

1. The ocean is a large part of the earth's surface.

2. Many kinds of plants and animals live in the ocean.

3. Rivers carry salt and other minerals into the ocean; the ocean contains many valuable minerals.

4. Some mammals are adapted for life in the ocean.

Vocabulary for the Unit:

ocean
mineral
evaporate
copper
oceanographer
algae
salmon
whale
vitamin
kelp
globe
dissolve
salty
nickel
scientist
food chain
minnow
spout
fertilizer
instruments
salt
underground
iron
pumped
seaweed
shellfish
life cycle
blubber
mammal
oysters

Material and Equipment Needed for Experiments:

milk cartons
*large needles
clean sand
salt
blocks of wood
several paper cups
water
*measuring cup
*jars with screw covers
*bowl
*spoon
pan

*Included in Lab Stack equipment

Achievement Test: Chapter 4, pp. 13-16

Books for Children: See Guide, pp. 368-369

Books for Teachers: See Guide, pp. 369-370

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

The Oceans	FS-1J62

Other Filmstrips:

Coast Lands of the Northwest	FS-B20
Columbia River	FS-B23
Continents and Oceans	FS-K35
Using Maps and Globes	FS-U6

Motion Picture:

We Explore Ocean Life	MP 215

Kit:

Wonders of the Pacific Shore	Kit 21C

Picture Sets:

The Sea	PS-49
Life in the Sea - I	PS-58
Life in the Sea - II	PS-59
Tools of Oceanography	PS-60
Ocean Geology - I	PS-61
Ocean Geology - II	PS-62
Ocean Meteorology	PS-63

Unit V: Plants and More Plants (2 weeks)

Text: Pages 96-117
Guide: Pages 372-385

Concepts and Percepts:

1. Seed plants may be grown from seeds, roots, stems, or leaves.
2. Plants provide man with food, fibers, and many other useful products.
3. Plants produce many seeds, which are distributed in various ways.
4. Each part of a tree has a special function.
5. Animals depend on plants for their food supply.
6. Forests provide food and homes for many animals.

Vocabulary for the Unit:

seed
underground
bulb
bark
tube
sap
drill
dandelion
stem
cutting
twig
layer
hard wood
sprout
root
"eye"
mineral
fiber
syrup
soft wood
liquid

Material and Equipment Needed for Experiments:

clump of grass
white potato
soil
small flowerpots
onion
sweet potato
2 fresh twigs with leaves
*2 glass jars
water
red ink
pieces of hardwood
pieces of softwood
hammer
*string

*Included in Lab Stack equipment

Achievement Test: Chapter 5, pp. 17-20

Books for Children: See Guide, pp. 382-383

Books for Teachers: See Guide, pp. 383-384

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

How Plants Spread and Reproduce	FS-1J68

Other Filmstrips:

Climate and Plants	FS-B17
Finding Out About Seeds, Bulbs, and Slips	FS-W21
How Seeds Travel	FS-1F100
Plants Grow and Change	FS-K28
Seeds	FS-G23
Story of Forests	FS-G56
Telling Trees Apart	FS-H22
Trees Grow	FS-K29
Ways of Starting New Plants	FS-1A12
The Fir	FS-217

Motion Pictures:

Plant Life at Work	MP 26
Partnerships Among Plants and Animals	MP 235

Kits:

Study of Plant Growth	Kit 16
Botany C - Leaves and Fruits	Kit 62
Botany D - Stems and Roots	Kit 63

Picture Sets:

Northern State Trees	PS-16
Trees, Evergreen	PS-27
Forests	PS-55

Transparencies:

Plant Growth	TR 308

Unit VI: Applied Science (4 weeks)

Texts: Science Far and Near, pp. 118-139
Working Together, pp. 92-124

Guides: Science Far and Near, pp. 386-395
Working Together, TG-41-52

Note: The science unit, "Applied Science", should be coordinated with the social studies unit, "Where We Get Clothing". This combined unit should be taught in one block of time in the daily schedule. The social studies unit on "People Who Make Our Homes" would then be postponed until mid-January.

Concepts and Percepts:

1. Many plant, animal, and synthetic materials are used to make cloth.

2. Looms are used to weave fibers into cloth.

3. Cloth can be colored with dyes.

4. Cloth can be made out of wood, milk, coal, sand, straw, and beans.

Vocabulary for the Unit:

applied science
pattern
fiber
biologist
caterpillar
silk
life cycle
cotton
spinning wheel
automated machine
rayon
petal
cloth
magnifying lens
hair
fur
cocoon
larva
silkworm
seed pod
loom
dye
squeezed
spool
clothing
thread
pigment
wool
pupa
moth
Pasteur
cotton gin
weave
chemist
plastic

Material and Equipment Needed for Experiments:

small pieces of cloth
2 stalks of celery
knife
*drinking glass
red ink
other plant stems and stalks
*pieces of cotton
board
*2 nails
round ice-cream container
*spool
hammer
long rubber band
pencil
chopped spinach
cut beets
milk
vinegar
eyedropper

*Included in Lab Stack equipment

Achievement Test: Chapter 6, pp. 21-24

Books for Children: See Guide, pp. 393-394

Books for Teachers: See Guide, p. 395

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Filmstrips:

Story of Cotton	FS-B29
Story of Wool	FS-Z66
Story of Leather	FS-Z67
Story of Rubber	FS-Z68
Clothes and Why We Wear Them	FS-Y27
The Clothing Factory	FS-Y31
Cotton Textile Industry	FS-B30
How Cloth is Made	FS-Y30
Materials for Clothing	FS-Y32
Proper Clothes and Their Care	FS-Y28
Where Clothes Come From	FS-Y29

Unit VII: Heat (3 weeks)

Text: Pages 140-165
Guide: Pages 396-405 and 489-495

Concepts and Percepts:

1. Heat travels by conduction, convection, and radiation.
2. Some materials are good conductors of heat; some are good insulators.
3. Heat can be radiated and reflected.
4. Fuel, heat, and oxygen are necessary in order to have a fire.
5. A fire can be put out by eliminating fuel, heat, or oxygen.

Vocabulary for the Unit:

insulation
refrigerator
fuel
reflected
insulator
fluffy
steam
furnace
conductor
heat rays
radiator
shiny

Material and Equipment Needed for Experiments:

*4 jars
*pieces of fur or wool
6 ice cubes
glass of water
jar of hot water
sheet of paper
*2 thermometers
pencils
silver spoon
stainless spoon
plastic spoon
dry wood
*magnifying glass
small fishbowl
*ice-cream bag
*candle
teakettle
electric hot plate
chalkboard eraser
electric light or hot radiator
paper bag

*Included in Lab Stack equipment

Achievement Test: Chapter 7, pp. 25-28

Books for Children: See Guide, pp. 403-404

Books for Teachers: See Guide, pp. 404-405

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Filmstrip:

Fire and Heat	FS-C37

Transparencies:

Insulators and Conductors	TR 309
Fuels and Oxygen	TR 310

Unit VIII. Machines at Work (2 weeks)

Text: Pages 166-183
Guide: Pages 406-415

Concepts and Percepts:

1. Most machines make work easier by increasing either force or speed.
2. There are three classes of levers; they can increase force or speed.
3. Gears are usually used to increase speed.
4. A wedge increases force.
5. Some plants and animals have natural wedges.

Vocabulary for the Unit:

machine
speed
force arm
beater
chain
pliers
reel

load
lever
load arm
blade
teeth
grip
seesaw

force
fulcrum
gear
drill
wedge
pry
weights

Material and Equipment Needed for Experiments:

long board
block of wood
yardstick
*ruler
pencil

book
*string
*eggbeater
bicycle

*Included in Lab Stack equipment

Achievement Test: Chapter 8, pp. 29-32

Books for Children: See Guide, pp. 411-413

Books for Teachers: See Guide, pp. 413-414

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

Levers	FS-1J95

Other Filmstrips:

Levers, Mechanics	FS-D49
Machines and Tools to Help Us Work	FS-W-25
Simple Machines	FS-G29

Motion Picture:

Machines That Move the Earth	MP 20

Transparencies:

Machines (Lever, Gear, Wedge)	TR 311

Unit IX: Electricity at Work (2 weeks)

Text: Pages 184-199
Guide: Pages 416-425

Concepts and Percepts:

1. Electric current has many uses. It can produce heat, light, and motion.
2. Electricity flows when there is a complete circuit. Switches are used to break a circuit of electricity.

Vocabulary for the Unit:

electricity
filament
dry cell
switch
socket
cable
insulation
bulb
vibrate
incomplete circuit
meter
strand
terminal
electromagnet
complete circuit
magnet
fuse
meter

Material and Equipment Needed for Experiments:

*piece of thin picture wire
dry cell
*piece of thick picture wire
paper
*glass jar
*thread
pencil
*iron nail
*iron screw or nut
*5 feet of insulated wire
*small lamp socket
flashlight bulb

*Included in Lab Stack equipment

Achievement Test: Chapter 9, pp. 33-36

Books for Children: See Guide, pp. 422-423

Books for Teachers: See Guide, p. 424

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

We Use Electricity	FS-1J96

Other Filmstrips:

Current Electricity	FS-B51
Distributing Electric Power	FS-B35
Edison	FS-B49

Magnetism and Electricity	FS-W26
Man's Use of Power	FS-J36
Story of Thomas Edison	FS-H2

Kit:

Magnetism and Electricity	Kit 18

Unit X: Moon, Planets, and Stars (3 weeks)

Text: Pages 200-225
Guide: Pages 426-441 and 496-499

Concepts and Percepts:

1. Our solar system is made up of the sun, nine planets, and their moons.
2. The planets and moons receive heat and light from the sun.
3. Rockets can travel through airless space.
4. The moon lacks water and air.
5. The moon travels around the earth in about a month.
6. The moon appears to have different shapes called phases.
7. A star gives off light and heat; the sun is a star.
8. A constellation is a group of stars with its own shape.

Vocabulary for the Unit:

rocket
rocket engine
satellite
planet
Mercury
Mars
Uranus
moon
balloon
parachute
solar system
Venus
Jupiter
Neptune
orbit
crater
phases
constellation
Earth
Saturn
Pluto

Material and Equipment Needed for Experiments:

large ball
chalk
*balloon
*thread
*2 corks
piece of cardboard
*handkerchief
electric light
sheets of black paper
small flashlight
wax paper

*Included in Lab Stack equipment

Achievement Test: Chapter 10, pp. 37-40

Books for Children: See Guide, pp. 436-439

Books for Teachers: See Guide, pp. 439-440

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

The Moon, Our Neighbor in Space	FS-1J61

Other Filmstrips:

Looking at the Stars	FS-Z56
The Sun's Family	FS-1A5
Constellations	FS-1A6
The Earth in Space	FS-W28
The Sun and Its Planets	FS-W29
Earth's Satellite -- The Moon	FS-W30
Stars and Galaxies	FS-W32
Constellations	FS-W33
Work of Astronomers, Space Travel	FS-W34
Sky Above Our Earth	FS-W24
The Solar System	FS-S25
The Stars	FS-S26
The Moon	FS-S23
Night and Day	FS-K38

Motion Picture:

Beyond Our Solar System	MP 231

Kits:

Earth in Space	Kit 17
Universal Planetarium	Kit 36
Universal Solar System	Kit 37

Transparencies:

The Moon	TR 312

Unit XI: The Earth's Survace (2 weeks)

Text: Pages 226-245
Guide: Pages 442-451

Concepts and Percepts:

1. The surface of the earth is made of bedrock.

2. Bedrock is changed to soil.

3. Rock is broken down by temperature changes, running water, and plants.

4. The surface of the earth is always changing.

5. There are many different kinds of soil.

Vocabulary for the Unit:

bedrock
temperature
gravity
crumble
soil
expand
sediment
delta
rock
contract
freeze
canyon

Material and Equipment Needed for Experiments:

*several jars with screw covers
soil
water
bowl
*magnifying glass
hot water
ice cube tray
paper bags
*spoon

*Included in Lab Stack equipment

Achievement Test: Chapter 11, pp. 41-44

Books for Children: See Guide, pp. 448-450

Books for Teachers: See Guide, pp. 450-451

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

Soil, the Earth's Greatest Treasure	FS-1J59

Other Filmstrips:

Exploring Our Earth	FS-C3
How Things in the World Change	FS-J35
Our Earth	FS-S22
Our Home, The Earth	FS-W23
Things in the World Change	FS-J40
What is the Earth Made Of?	FS-P26
Your Changing World	FS-J24

Picture Set:

Soils	PS-53

Transparencies:

The Changing Surface of the Earth	TR 313

Unit XII: Learning About Rocks (3 weeks)

Text: Pages 246-265
Guide: Pages 452-463

Concepts and Percepts:

1. Geologists can tell much about the history of a region by studying rocks and fossils.
2. Sedimentary rocks are formed from layers of sand and mud.
3. Rocks differ in many ways.
4. Sandstone and limestone are kinds of rock.
5. Clay is a sedimentary material that has many uses.
6. Fossils are the remains or prints of former plant or animal life.

Vocabulary for the Unit:

geologist
sedimentary
clay
kiln
pudding stone
dinosaur
rock
limestone
hardness
sediment
shale
footprint
fossil
sandstone
adobe brick
gravel
vinegar
clay bed

Material and Equipment Needed for Experiments:

*several different kinds of rocks
clay
straw
water
milk cartons
dry clay
pieces of clay flowerpots
pieces of broken dishes
vinegar or lemon juice

*Included in Lab Stack equipment

Achievement Test: Chapter 12, pp. 45-48

Books for Children: See Guide, pp. 460-461

Books for Teachers: See Guide, pp. 461-462

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

Rocks for Us	FS-1J60

Other Filmstrips:

How Rocks Are Formed	FS-1A3
The Story of Fossils	FS-1A16

Picture Sets:

Igneous and Metamorphic Rock	PS-46
Sedimentary Rocks	PS-50
Geological Instruments	PS-56

Kit:

Digging for Dinosaurs	Kit 21B

Unit XIII: The Water Cycle (2 weeks)

Text: Pages 266-281
Guide: Pages 464-471

Concepts and Percepts:

1. Water must be conserved and used wisely.
2. Water leaves the earth through evaporation and returns in some form of precipitation. This is called the water cycle.
3. Water can be stored for later use.
4. Irrigation helps crops to grow on otherwise barren land.
5. Water is transported through mains and smaller pipes.
6. Water can be forced through pipes with pumps.

Vocabulary for the Unit:

rainwater
underground water
cloud
dam
gravity
pump
water cycle
water vapor
raindrop
irrigation
tunnel
precipitation
evaporation
fog
reservoir
ditch
water main
purified

Material and Equipment Needed for Experiments:

*2 glasses
water
*2 six inch rulers
piece of aluminum foil
*funnel
*rubber tube

*Included in Lab Stack equipment

Achievement Test: Chapter 13, pp. 49-51

Books for Children: See Guide, pp. 468-470

Books for Teachers: See Guide, pp. 470-471

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

Water and Life FS-1J65

Picture Sets:

Cloud Formations	PS-45
Weather Phenomena	PS-57
Ground Water	PS-48

Transparencies:

The Water Cycle	TR 314

Unit XIV: Cycle of a Mineral (2 weeks)

Text: Pages 282-295
Guide: Pages 472-479

Concepts and Percepts:

1. Calcium is needed by animals and plants.
2. Limestone is made up largely of calcium.
3. Water that contains carbon dioxide can dissolve limestone.
4. Calcium undergoes changes within the earth's crust.

Vocabulary for the Unit:

mineral
limestone
shell
pillar
limewater
calcium
vinegar
spear
carbon dioxide
seawater
lime
fizzle

Material and Equipment Needed for Experiments:

limewater
*drinking glasses
drinking straws
clear vinegar
*bits of seashells
powdered lime
soil
water

*Included in Lab Stack equipment

Achievement Test: Chapter 14, pp. 52-54

Books for Children: See Guide, pp. 476-478

Books for Teachers: See Guide, p. 478

MATERIALS AVAILABLE FROM AUDIO-VISUAL OFFICE

Heath Science Filmstrip:

Rocks for Us	FS-1J60

Other Filmstrip:

How Rocks Are Formed	FS-1A3

Picture Set:

Minerals	PS-13